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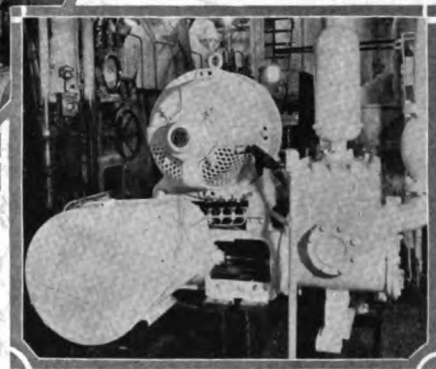
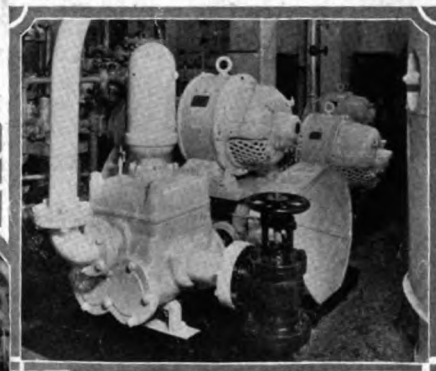
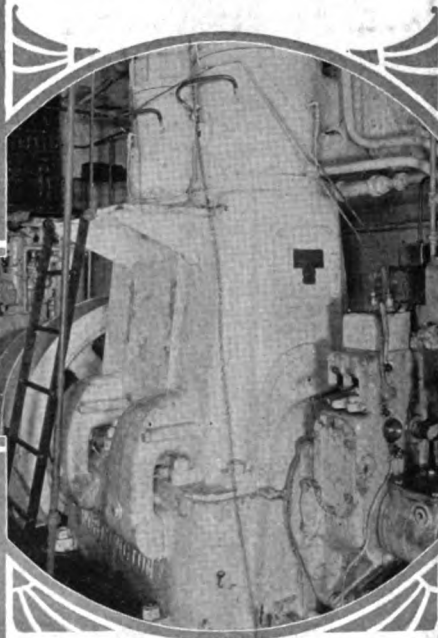
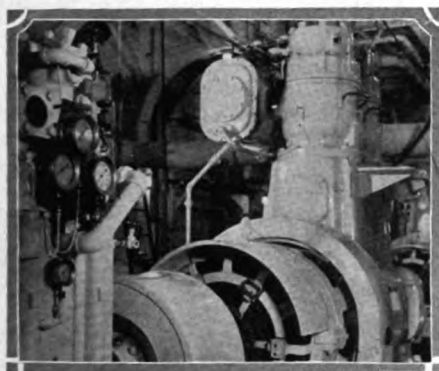
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Worthington Motorship Auxiliaries on the "M. S. Challenger"



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Marine Review



End of first voyage as a motorship—The SEEKONK is discharging Pacific coast lumber at New York

Diesel vs. Turbine on Hog Island Ships

BY A. H. JANSSON

IN THE first half of the nineteenth century, the United States demonstrated the supremacy of her merchantmen on the seas. With her fast clipper ships and their daring, resourceful and skillful officers and men the American flag was well known in every port of the world. Then came the iron steamship and with it the eclipse of the sailing ship. Science applied to practical problems always forging ahead, slowly but constantly, lowered the cost of operation and increased the speed and certainty of the delivery of freight. Better machinery, more efficient combustion, invention of the steam turbine, the use of fuel oil in place of coal, all played their part.

When the first of these revolutionary advances in propulsion was introduced, the United States feeling secure in the supremacy of the sailing ship was reluctant to change and moved slowly. Furthermore, her scientific and industrial development at that time was not comparable with that of Great Britain, the greatest of her European rivals. Serious results were not long in being felt. Foreign carrying trade was soon lost

to American ships and fell into the hands of those nations eagerly engaged in developing new departures in marine engineering and building their ships along these new lines.

Will history repeat itself? Europe has taken the lead and is now actively engaged in adapting oil engines to the propulsion of ocean-going ships. Large fleets of this type of ship are being built abroad particularly by Great Britain and the Scandinavian countries, with Germany also active. Are American steamship owners of today about to repeat the error of their forerunners in attempting to continue operation of a type of ship which is bound to be largely obsolete in the near future in the face of overwhelming odds in operating costs.

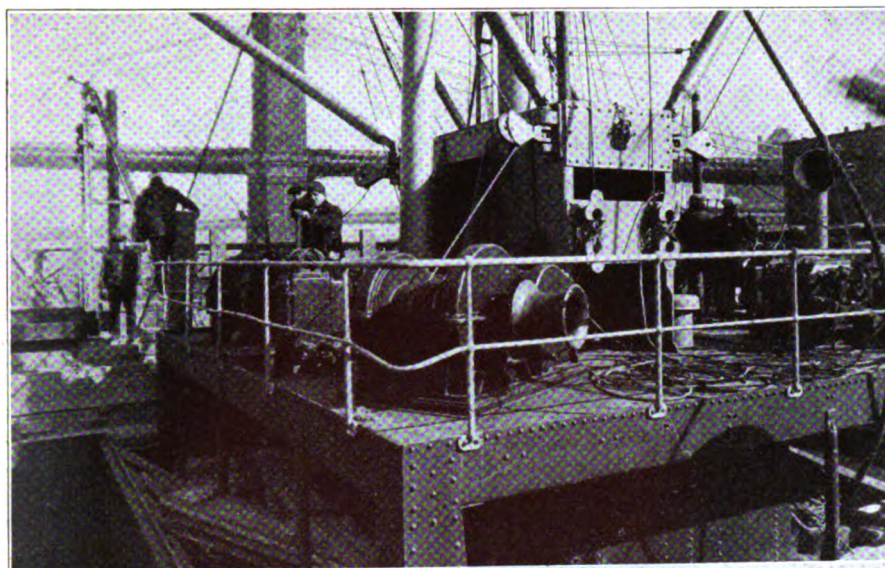
America Has Technical Skill

The navy and the record of shipbuilding during and after the war clearly demonstrate America's tremendous industrial development along mechanical lines and its high order of engineering skill. Innovations in engineering practice in the navy are distinctly of superior

order and are original. The electric drive, for instance, was first thoroughly developed by the United States navy.

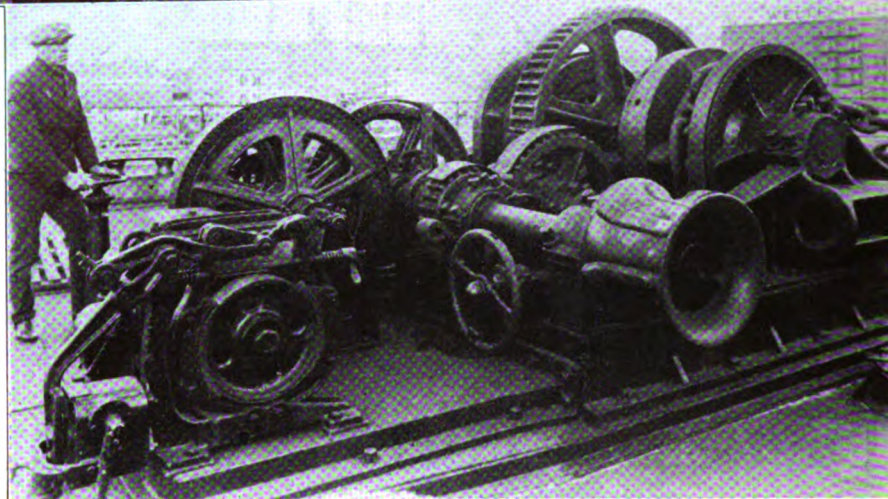
No less than three substantial and fully experienced American shipbuilding companies on their own initiative and at their own expense have constructed comparatively large unit oil engines, and installed them in place of the steam drive in existing ships or in new hulls. One of these, the Wm. Cramp & Sons Ship & Engine Building Co., Philadelphia, acquired from the shipping board one of its large fleet of type A, standardized freighters built at Hog Island and completed in 1919 with the understanding that this ship would be converted to oil engine drive and that when completed would be owned and operated under the American flag. This vessel, the motorship SEEKONK, her conversion completed in the fall of 1923, has now concluded under management of the United American lines, her maiden voyage from New York to Baltimore, Panama Canal, San Pedro, Cal., San Francisco, Tacoma, Wash., and return.

An opportunity, therefore, is offered to present the performance records of



RAISED WINCH PLATFORM GIVES OPERATOR CLEAR VIEW AND AIDS STOWAGE OF DECK LUMBER—AT RIGHT, VIEW SHOWS ELECTRIC DRIVEN DECK MACHINERY

this ship and to compare this performance with that of one of her steam driven sister ships. Owing to the exact similarity in type with the exception of the motive power and auxili-



ship is greater than for the motorship. The difference shown is, however, based on $\frac{1}{2}$ inch greater draft. In this connection, the light condition or zero deadweight was established very carefully for the motorship SEEKONK by the engineers of the Cramp company. The figures given are taken from the capacity plans and latest records for the two ships.

Table III shows the actual engine room crews for each ship. The number and rating of the men were received from the office of the marine superin-

TABLE I
Principal Particulars

Hull	M.S. Seekonk	S.S. Hog Island
Length overall, ft., ins.	401-0- $\frac{3}{4}$	401-0- $\frac{3}{4}$
Length, B.P.P., ft., ins.	390-0	390-0
Beam molded, ft., ins.	54-0	54-0
Depth to upper dk., ft., ins.	32-0	32-0
Load draft to bottom of keel, ft., ins.	24-4 $\frac{1}{2}$	24-5 $\frac{1}{2}$
Displacement in Salt Water—tons	11190	4969
Gross tonnage, U.S.	4998	3037
Net tonnage, U.S.	3114	3037
Panama Canal, gross tonnage	6162	6130
Panama Canal, net tonnage	4417	4257
Class		
+ A-1 E American Bureau	same	
+ 100 A-1 Lloyds	same	
Machinery		
Main Engine	Main Engine	
One Cramp B. & W. diesel, 6-cylinder, 4-cycle.	One Curtis Marine turbine, double reduction Gear.	
Stroke, 59 inches.	Shaft Horse Power, 2500.	
Dia. of Cyl. 29 $\frac{1}{2}$ inches.	R.P.M. Turbine, 3234.	
I.H.P., 2300.	R.P.M. of Propeller, 90.	
R.P.M., 85.		
Auxiliaries	Boilers	
3—100 B.H.P., 2-cylinder Cramp B. & W. diesel eng. each direct-connected to 65 K.W. Diehl generators, 400 R.P.M. All deck and engine room auxiliaries electric driven.	3—Water tube-oil burning Babcock & Wilcox marine type. Foster Superheaters. Total Heating Sur. sq. ft., 8700.	
Westinghouse Motors for deck machinery.	Working press, Lbs. gage 200.	
Diehl motors for engine room machinery.	Superheat degrees. Fahr., 75.	
1 - Hydro - electric steering gear.	Auxiliaries	
10—3-ton electric winches.	Steam driven.	
1—Electric windlass and one electric capstan.		

ary drive, the results of this comparison give an astonishing and vivid, practical example of the superiority of the oil engine over the steam driven ship. No one of an open mind can fail to be tremendously impressed and to feel the necessity of prompt action if we are to continue our efforts to obtain and to hold our fair legitimate share of the ocean carrying trade.

It has been said and records bear out the statement that Hog Island ships are good ships. In just praise of a good record, a story on the *Four Year Log of a War Built Ship* in the December issue of MARINE REVIEW gave details of the performance of the steamship HOG ISLAND, covering the five last voyages of the 13 she had made at that time, since her commission. Her performance is not the best nor is it by any means the worst of her 100 odd sister ships. It was selected as a good average of the type.

Accompanying tables compare the performance of the steamship HOG ISLAND and the motorship SEEKONK. From an examination of Tables I and II the Panama net tonnage is somewhat greater for the motorship than for the steamship, while the deadweight for the steam-

tendents of the respective operating companies. The salaries per month for the various ratings and subsistence allowance were taken from the latest annual report of the shipping board.

Table IV gives a detailed record of actual performance for three voyages and their mean results for the steamer HOG ISLAND and for the initial voyage of the motorship SEEKONK. In arriving at the fuel costs per day, the actual prices paid in New York and at out-ports were used. This materially favored the motorship as over two-thirds of her fuel oil was taken on board at San Pedro at \$1.00 per barrel while the price in New York at the time for this grade of oil was \$1.68 per barrel. The fresh water consumption for the steamship seems large, but was taken directly from the chief engineer's report. Evidently no attempt was made to use an evaporator.

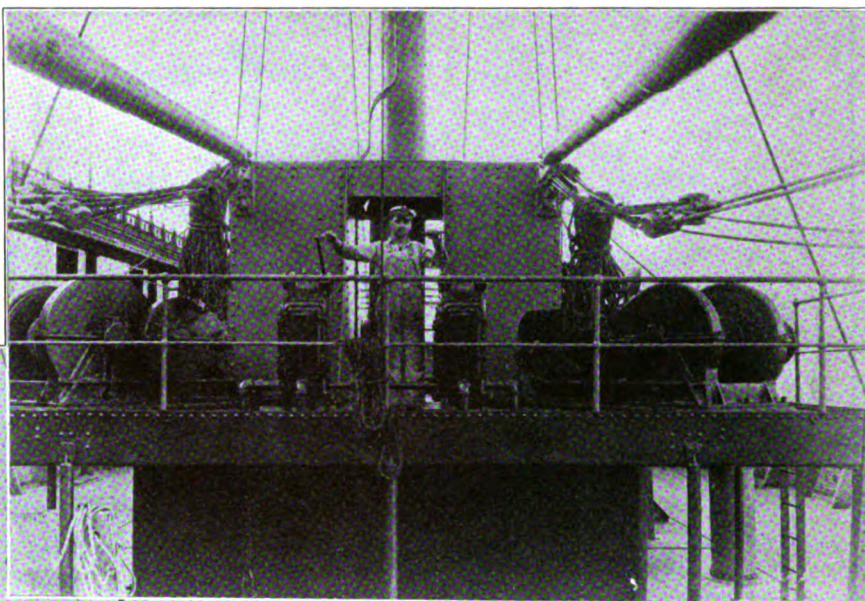
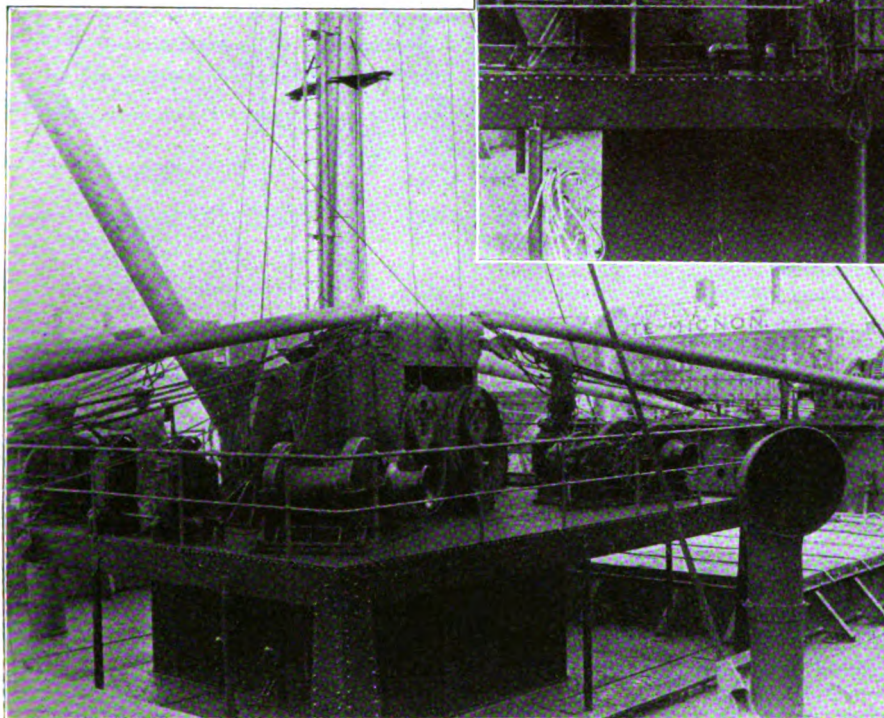
Comparative Advantages

The amount of lubricating oil used on the motorship is given as 7.86 gallons per day at sea for all purposes which at 58 $\frac{1}{2}$ cents per gallon will equal \$4.60 per day. Though no records are available for lubricating oil for the steam-

ship at least one-third of this amount would be used. On the above basis, the steamship would show a saving of \$92 per month for this item while at sea. In port, the saving would amount to about \$30 per month.

The outstanding factors in favor of the motorship in the comparison in Tables II, III and IV are:

1. The saving in fuel costs per day in port, \$82.50.



ANOTHER VIEW OF RAISED PLATFORM ILLUSTRATING HOW ONE OPERATOR CAN MANIPULATE BOTH WINCHES AT ONCE—AT LEFT, RAISED PLATFORM FOR WINCHES

not justified. Increase in draft, of course, means additional resistance to propulsion. Great extremes of draft on

2. The saving in fuel costs per day at sea, \$235.00.

3. The saving in the carrying of large quantities of fuel oil or greatly increased steaming radius.

4. The saving in the carrying and purchase of large quantities of fresh water.

5. The saving in wages and subsistence of engine room crew per day, \$14.10.

6. Approximately 9000 cubic feet greater cargo capacity.

Where Steamship Leads

The steamship is favored by the following:

1. From the scales on their respective capacity plans for the same draft the deadweight is about 85 tons greater.

2. An estimated saving in lubricating oil at 58½ cents per gallon of \$3.07 per day at sea and \$1.00 per day in port.

3. Slightly less gross and net United States register and Panama canal tonnage—a saving in each transit of the canal of \$96.

From the above, the actual saving of the motorship over the steamship in operating expense per day at sea is \$246

and in port \$95.60. Besides this saving in disbursements, a much larger deadweight cargo can be carried in place of the excess fuel oil and fresh water needed for the steamship, or by the same token the motorship will have a greatly increased steaming radius for the same cargo.

The difference in draft for the mean of the three voyages for the steamship HOG ISLAND and the average draft for the single voyage of the motorship SEEKONK shown in Table IV might indicate that the comparison of performance is

TABLE II
Cargo and Tank Capacities

	M.S. Seekonk	S.S. Hog Island
Cargo Capacities:		
Bales cu. ft.	382,210	373,220
Grain, cu. ft.	407,580	400,210
Reserve feed water in tons.	none	357
Fresh water in tons.	97	97
Fuel oil tank capacities in tons.	1100.6	1222.8
Ballast tank capacities in tons.	2646.6	2395.0

Deadweight in Tons

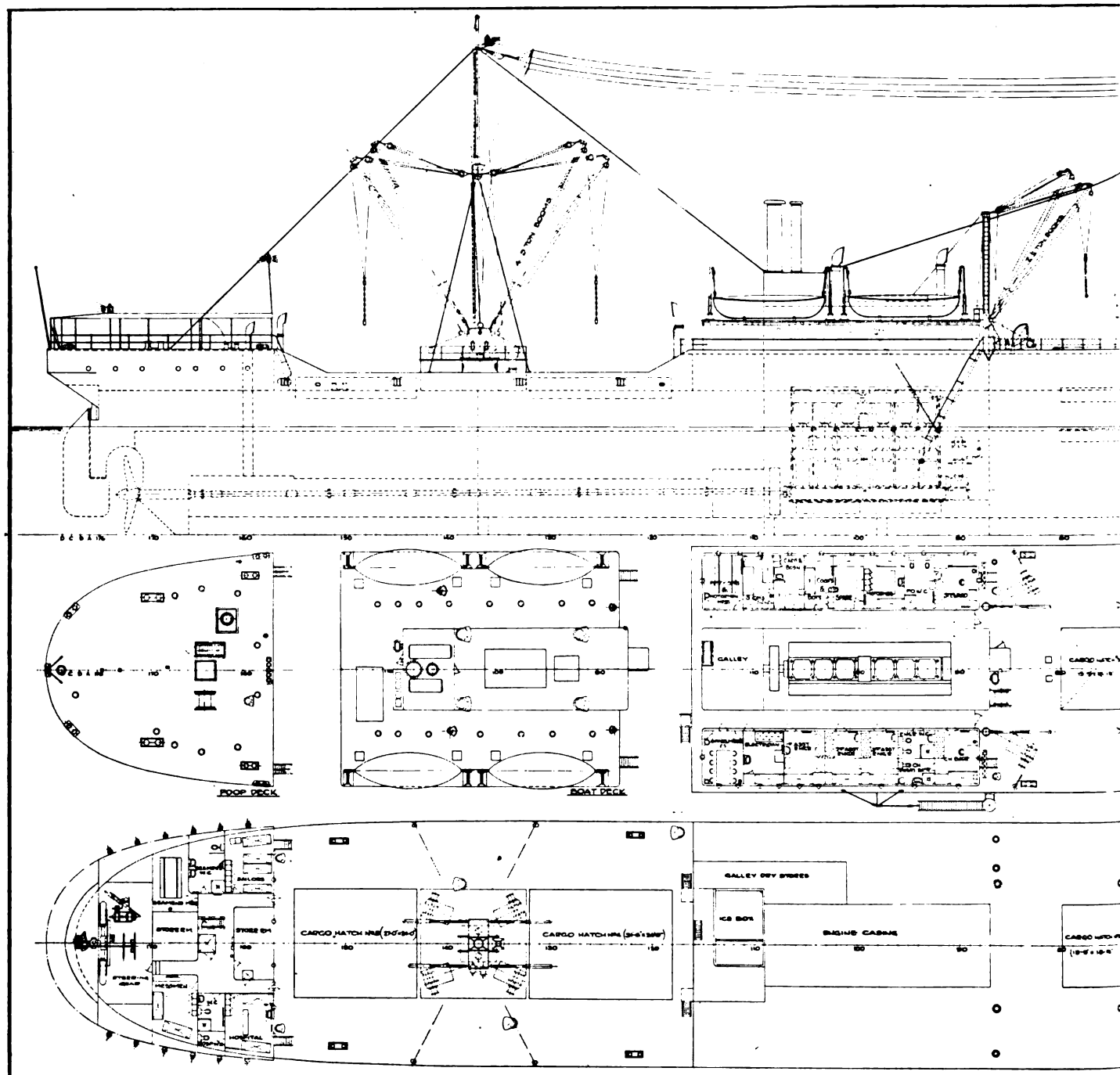
	M.S. Seekonk	S.S. Hog Island
Mean light load line, ft., ins.	8-11½	8-6
Corresponding deadweight.	0	0
Mean full load line, ft., ins.	24-4½	24-5½
Corresponding deadweight, tons.	7690	7815
Freeboard at full load, ft., ins.	7-10	7-9½

TABLE III
ENGINE ROOM CREWS AND WAGES

S. S. Hog Island	Per month	M. S. Seekonk	Per month
1—Chief engineer.	\$250.00	1—Chief engineer.	\$250.00
1—First ass't. engineer.	185.00	1—First ass't. engineer.	185.00
1—Second ass't. engineer.	165.00	1—Second ass't. engineer.	165.00
1—Third ass't. engineer.	150.00	1—Third ass't. engineer.	150.00
3—Oilers at \$72.50.	217.50	1—Electrician.	150.00
3—Water tenders at \$72.50.	217.50	3—Oilers at \$72.50.	217.50
2—Wipers at \$57.50.	115.00	1—Extra man at \$72.50.	72.50
3—Firemen at \$65.00.	195.00		
15 Total in engine room crew.	\$1495.00	9 Total in engine room crew.	\$1190.00

Saving in Engine room wages per month. \$305.00
Saving in subsistence, 6 men at 65 cents per day. 117.00

Total saving per month. \$422.00



HOG ISLAND TYPE OF SHIP AS ALTERED FROM STEAMER TO MOTORSHIP. THIS VESSEL, THE SEEKONK, NOW

a voyage, tending to bring the average draft down, might easily cause an average lower propulsive efficiency than a greater average draft based on nearly equal conditions of loading throughout the different legs of the voyage. As a matter of fact, the motorship SEEKONK averaged a speed of 9.98 knots with a draft of 21 feet 6 inches on the legs from San Pedro to Panama and from Panama to New York. On her outward voyage, the motorship SEEKONK was extremely light averaging only 13 feet 4½ inches.

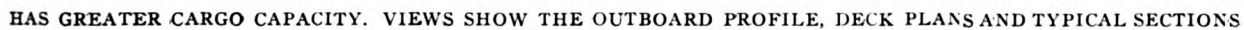
The average drafts given in Table IV for both the steamship HOG ISLAND and the motorship SEEKONK were arrived at as follows: The mean drafts at the

beginning of each leg of the voyage was multiplied by the distance covered in that leg. These products were summed up and divided by the total distance covered on the voyage.

However, this much may be said for the steamship. With the hull perfectly clean and freshly painted, with the turbines thoroughly groomed and working properly, developing 2500 shaft horsepower, with a properly designed propeller to absorb this power efficiently after reduction to 90 revolutions per minute, a somewhat greater speed at an equal draft should be obtained than that for the motorship with its engine developing 2300 indicated horsepower. It is, therefore, only fair to state that additional

performance data covering several voyages will be necessary to prove conclusively that the motorship SEEKONK can maintain the same or greater average speed for the same loading as the steamship HOG ISLAND. Any difference there may be, however, is not likely to be great either way.

In Table V, an attempt has been made to show clearly the difference in operating costs for these two ships in similar service for a period of one year. Actual performance as recorded in Table IV is used, as a basis for the computation. Fuel oil and diesel oil prices have both been taken, as current in New York at the beginning of February, 1924, so that in this comparison, the motorship



The accompanying photographs and drawings show that the motorship SEEK-ONK looks much the same as she did when a steamship. Certain changes, however, have been made. The line shaft and bearings from thrust to tail shaft were renewed and a larger shaft fitted. The old horse shoe thrust block was replaced by a new type lubricated from the main engine system. New foundations have been fitted for all the machinery. A new solid manganese bronze propeller somewhat different in design from the original was installed. The original bulkheads at the forward end of the old boiler room and at the after

as follows:

1—Donkey heating boiler, Cramp tub-

TABLE IV

Comparative Performance of the Steamship Hog Island and the Motorship Seekonk.

S. S. HOG ISLAND					M.S. SEEKONK
From MARINE REVIEW of December, 1923 as recorded from Chief Engineer's Log.					From Wm. Cramp & Sons S. & E. B. Co., office of J. F. Metten, Chief Engineer.
Voyage No.	11	12	13	Mean	1
Dates.....	11-22/22 2-23/23	3-14/23 5-12/23	6-9/23 8-18/23	Of the voy- ages 11, 12, 13, of S.S. Hog Island	11-18/23 to 2-6/24
Ports.....	N.Y.-Medit. Boston-N.Y.	N.Y.-Medit. New York	N.Y.-Medit. New York		N.Y. Baltimore N.Y.-Panama San Pedro-San Francisco, Port- land, Seattle, Tacoma, N.Y.
Total time in days.....	92.101	59.804	70.062	73.990	84.202
Days at sea, port to port.....	52.885	45.042	46.411	48.112	55.445
Days in port.....	39.217	14.762	23.651	25.878	28.757
Distance observed, port to port, nautical miles.....	11,611	11,660	11,285	11,519	13,322
Average speed, knots.....	9.14	10.78	10.13	10.00	10.01
Average R.P.M.....	79.1	84.5	86.0	83.2	84.0
Apparent Slip, per cent.....	15.0	6.6	10.0	10.5	8.8
Average, draft, ft., ins.....	20-11	17-5½	19-0	19-1½	17-0
Fuel per day, at sea, bbls.....	191.0	194.1	192.8	192.6	53.53
Fuel per day at sea, tons.....	28.47	28.63	28.67	28.60	7.50
Fuel cost per day at sea.....	\$273.10	\$305.70	\$316.20	\$298.30	\$63.30
Av. miles per day at sea.....	219.5	258.8	243.1	240.0	240.3
Miles per ton of fuel.....	7.71	9.04	8.48	8.41	32.04
Fuel per day in port, bbls.....	73.0	57.1	43.0	57.7	4.9
Fuel per day in port, tons.....	11.00	8.40	6.40	8.60	0.69
Fuel cost per day, in port.....	\$104.40	\$89.90	\$70.50	\$88.30	\$5.80
Water per day at sea, tons.....	27.8	13.8	19.5	20.4	1.0
Water per day in port, tons.....	14.0	13.7	12.0	13.2	1.0
Weather conditions.....	Average	Average	Average	Average	Average
Lub. oil, gals. per day at sea.....	No record	No record	No record	No record	7.86
Lub. oil in gals. per day in port.....	No record	No record	No record	No record	2.51
Fuel on board leaving, bbls.....	13,228	13,335	13,620	13,394	1,614
Fuel bought in out ports, bbls.....	1,526	None	None	509	3,900
Fuel on board arriving, bbls.....	1,784	3,795	3,676	3,085	2,405
Fuel on board leaving, in tons.....	1,971	1,987	2,029	1,996	226
Fuel bought in out ports, in tons.....	227	None	None	75.6	546
Fuel on board arriving, in tons.....	266	565	548	459.7	337
Water on board leaving, tons.....	No record	370	232	301	No record
Water bought in out ports, tons.....	No record	553	760	656	No record
Water on board arriving, tons.....	No record	70	70	70	No record

of all machinery, which will encourage and greatly help the officers and crew to keep everything in good order, and so increase the life and usefulness of all equipment. The same applies to the machine shop and the storerooms. Any visitor to the ship will receive a most favorable impression concerning the reliability and efficiency of both the machinery and personnel.

The deck winches, 10 in number, two for each hatch, are all new and are electric motor driven, completely enclosed and watertight. The winches were made by Cramp and the motors of 20 horsepower, 220 volts, direct current, 400 revolutions per minute, by the Westinghouse Electric & Mfg. Co., East Pittsburgh. They have the drum type of control, watertight and reversible and dynamic braking. In the accompanying illustrations, it will be seen that all of the winches, in the well deck both forward and aft, have been placed on substantial elevated steel platforms. Part of the space under these platforms is enclosed and accommodates a work bench. This space is also particularly suited for mounting the resistors for the electric controllers for the winch motors. The primary reason for elevating the winches, however, was so that deck loads can be carried without burying the winches or subjecting them to chances of damage with shifting of such loads. One of the accompanying illustrations shows the motorship SEEKONK on her return to New York on her maiden voyage, with a deep deck load of lumber. Their elevated position also gives the operator an exceptionally good view of both the hatch and the dock or lighter over the side of the ship.

On her maiden voyage, the motorship SEEKONK made no involuntary stops and

ular design.

2—Starting air tanks.

2—Daily supply and settling tanks, each of sufficient capacity for 12 hours.

Deck Machinery, Etc.

1—Windlass, changed over from steam to motor drive, 45 horsepower, 425 revolutions per minute, 220 volts, direct-current.

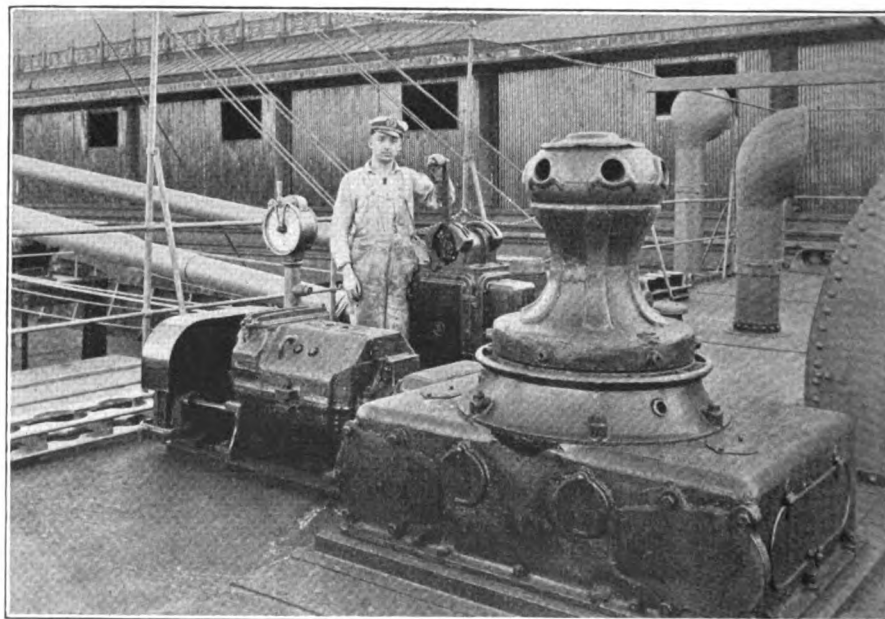
1—Capstan, changed over from steam to motor drive, 20 horsepower, 400 revolutions per minute, 220 volts direct-current.

10—3-ton winches, Cramp double geared type, 20 horsepower, 400 revolutions per minute, 220 volts, direct-current.

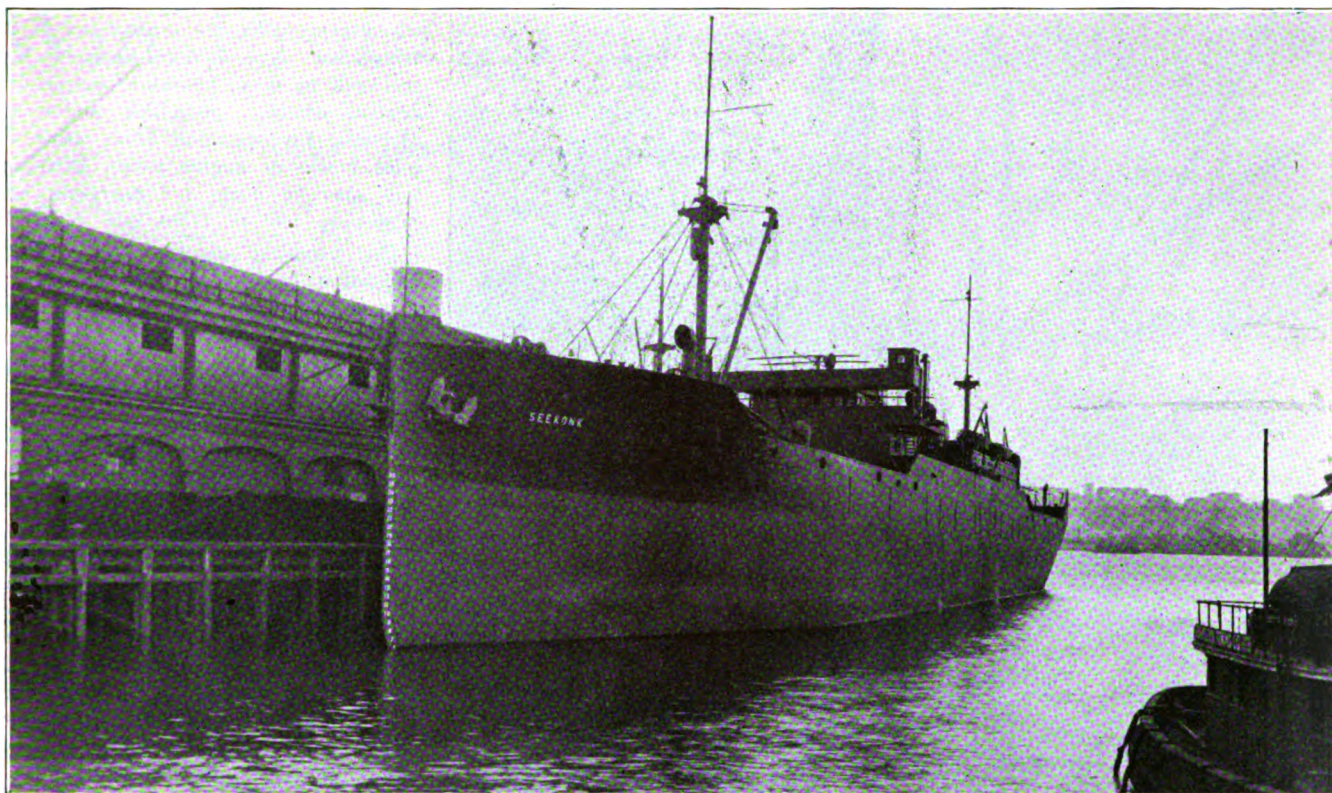
1—Steering gear, American Engineering Co., Hele-Shaw type, 15 horsepower, 850 revolutions per minute, 220 volts, direct-current.

A notable feature of this ship is the apparently great care which has been given to the study of proper and orderly arrangement of all auxiliaries both

in the engine room and on deck. There is neatness and orderliness in the layout



ELECTRIC DRIVEN CAPSTAN ON POOP DECK OF SEEKONK



NEW MOTORSHIP AT PHILADELPHIA. SHE WAS RECONDITIONED AND FITTED WITH A POWERFUL DIESEL ENGINE BUILT BY AN AMERICAN COMPANY

on her arrival in New York needed no repairs.

What Is the Cost?

Taking a Hog Island type A freighter with the intention to convert to a motorship, in every respect equal to the SEEKONK, with a thorough conversion and electrification of all auxiliaries, what would the ultimate cost be? The cost within certain limits will be a matter of negotiation. The shipping board would probably sell one of these steamships to a responsible American steamship owner for this purpose for \$5 per deadweight ton, or between \$37,500 and \$39,000. To duplicate the SEEKONK would mean an additional outlay of from \$400,000 to not more than \$500,000. The completed motorship would, therefore, mean a capital outlay of \$437,500 to a maximum of \$539,000.

To buy one of these steamships to operate as a steamship would cost \$30 per deadweight ton or \$225,000 to \$234,000. At once, on acquiring such a ship a certain amount would have to be expended in overhauling. Add \$5000 as the initial outlay before the ship is ready for sea. This ship and all her equipment would be five years old and as she continued in service replacements and renewals would be in order from time to time.

The difference between the highest initial cost as a motorship and the initial cost as a steamship would be, on the above basis, \$539,000 less \$239,000 or

\$300,000 and between the two lower costs, \$437,500 less \$230,000 or \$207,500. Six per cent on \$300,000 equals \$18,000 per annum. Depreciation in 20 years on

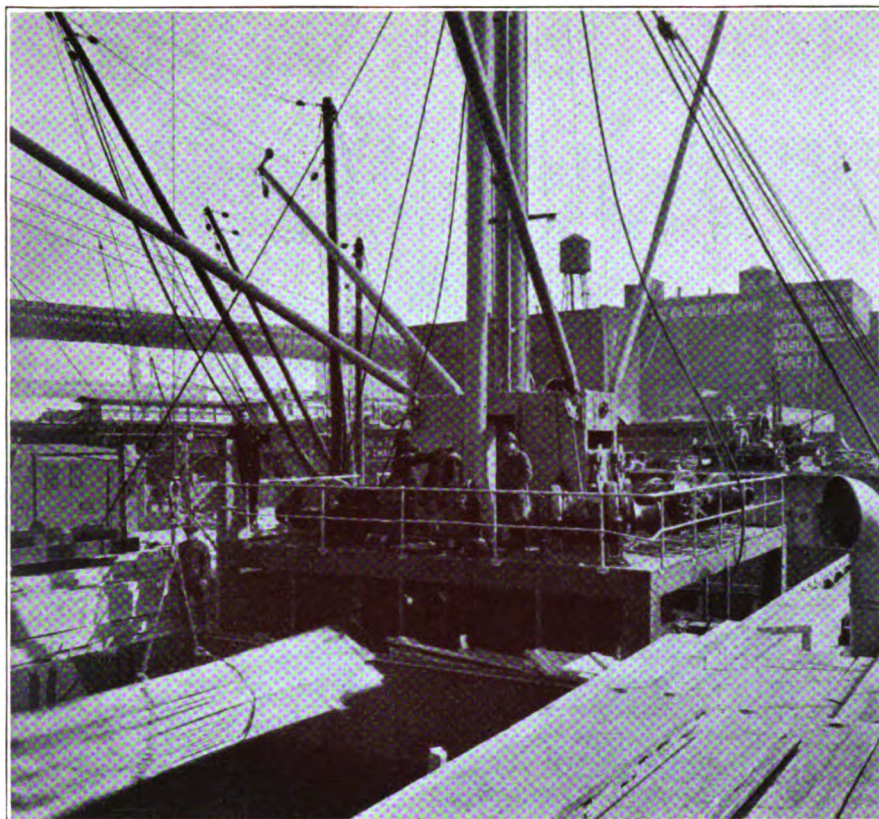
\$300,000, equals \$10,715 per annum. (Allowing for interest returns at 4 per cent.) The total is \$28,715 per annum. This would still leave a margin of some-

TABLE V

Analysis of Difference in Cost of Operation of S.S. Hog Island and M.S. Seekonk for similar service (Data from Performance Records Table IV.)

Itinerary	S.S. Hog Island N. Y.-Mediterranean and return One year	M.S. Seekonk N. Y.-Mediterranean and return One year
Period		
At sea, days	185	185
In out port, days	108	108
In home port, days	72	72
Lub. oil used at sea, gals.	485	1454
Lub. oil used in port, gals.	151	452
Fuel oil consumed at sea, bbls.	16 deg. B. 35,631	26 deg. B. 9,903
Fuel oil in port, bbls.	16 deg. B. 10,386	26 deg. B. 774
Fresh water at sea, tons	3,774	185
Fresh water in port, tons	2,376	180
Cost of lub. oil used at sea, at 58 1/2c gal.	\$284	\$851
Cost of lub. oil used in port, at 58 1/2c gal.	88	264
Cost of fuel oil used at sea, at \$1.66 1/2 per bbl.	\$59,325	at \$2.163 \$21,420
Cost of fuel oil used in port, at \$1.66 1/2 per bbl.	\$17,292	at \$2.163 \$1,674
Cost of fresh water... 1/3 at 25c a ton... 2/3 at \$1.20 a ton...	\$5,432	at 25c a ton \$91.00
Eng. room crew wages at \$1,495 per mo.	\$17,940	at \$1,190 per mo. \$14,280
Eng. room crew subsistence	15 men at 65c per day \$3,559	9 men at 65c per day \$2,200
Total expense above items	\$103,920	\$40,780
Total fuel oil carried, tons (amt. used plus 6%)	7,291	1,585
Total fresh water carried, tons (amount used at sea plus 2%)	3,849	total amt. plus 2% 372
Total of water and fuel carried, tons	11,140	1,957

M.S. SEEKONK saves \$63,140 in operating expense over a period of one year. If freight is offered, the motorship can carry about 8,500 tons more deadweight cargo during the year than the steamship due to the lesser weight and volume of fuel oil and water carried. With current rates of \$20 a ton for general cargo and \$16.80 a ton for high density cotton at Alexandria, this would mean a large additional revenue, approximately equivalent to one and one-quarter additional voyages during the period of one year. In deadweight carrying capacity, four voyages of the M.S. SEEKONK would be equivalent to 5 1/4 voyages of the steamship HOG ISLAND.



SHOWING HOW DECKLOAD OF LUMBER IS CONVENIENTLY STOWED IN WAY OF RAISED DECK PLATFORMS

thing over \$30,000 a year saving in operating cost of the motorship over that for the similar steamship. Taking the lower cost suggested will, of course, considerably increase the margin of saving due to operating costs. Over and above this would be the chance of carrying considerably more cargo or a small amount of additional cargo and a much greater steaming radius. Better terms than those indicated above for the necessary capital can no doubt be arranged by use of the shipping board fund for such or like purposes.

Equip Diesel-Electric Dredge for Lake Use

The first commercial, privately owned diesel-electric hopper dredge will be put into operation on the Great Lakes by the Construction Materials Co., Chicago, during 1924. Orders have been placed with the General Electric Co. for complete electrical equipment to be installed in the LAKE WEIR, which will be converted for this purpose. The Construction Materials Co. will use the boat for dredging and also for transporting and delivering construction materials for building purposes. The boat will be the first diesel-electric dredge in operation on the Great Lakes.

The propulsion equipment consists of two 600 brake horsepower diesel engines built by the Worthington Pump & Machinery Corp., New York, each di-

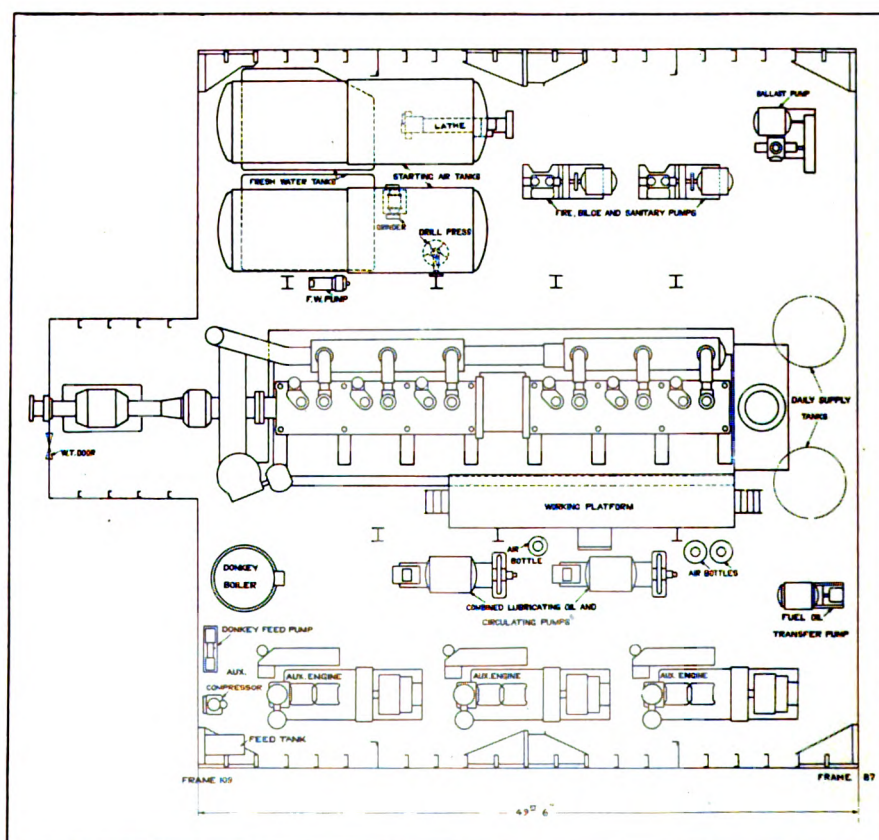
rect-connected to a 400-kilowatt main generator and a 35 kilowatt auxiliary generator. Under normal operating conditions, each main generator will drive

a 500-horsepower motor direct-connected to a propeller, the craft being of the twin-screw type. Ward-Leonard control will be used, providing independent control of each propelling motor and arranged for operation from either the pilot house or engine room. Provision will also be made for operating both propelling motors from one generator.

One auxiliary generator will furnish excitation for the motors and generators and the other will be used for furnishing power for driving the engine room auxiliary motors, steering gear and lighting. All the auxiliaries will be electrically driven.

In addition to the propelling equipment, two 400-horsepower, motor-driven dredging pumps will be provided. The power for these will be taken from either or both of the main generators. Under one condition of operation, both dredging pumps will be driven from one generator, the other generator furnishing power for propulsion. Under another condition of operation, when no propulsion is required, each dredging pump will be connected to a main generator and will operate independently.

The boat will measure 261 feet in length, with a beam of 43½ feet and a draft, when loaded, of 18 feet. Included among the auxiliaries, besides the steering gear, will be three 10-horsepower pumps. The dredge will also be equipped with facilities for handling dry material.



PLAN VIEW SHOWING POSITION OF MACHINERY IN ENGINE ROOM OF MOTORSHIP SEEKONK

Win Profit in Marine Insurance

American Companies Improve Earnings in Past Year—
Risks Chosen More Carefully—Announce New Policy

MARINE underwriters comparing the past year with previous years find a big improvement. Most of the companies have been successful in reducing their loss ratios and keeping their expenses below the previous average. Premiums have been well maintained. The following shows premiums and losses paid by those companies which so far have filed their statements with the New York state insurance department:

Agricultural, premiums \$245,606; losses, \$135,700; American, \$280,041; losses, \$159,781; American Eagle, \$61,668; losses, \$58,251; Bankers & Shippers, \$125,551; losses, \$167,048; Boston, \$982,775; losses, \$719,976; British and Foreign, \$856,773; losses, \$235,429; Commercial Union, \$353,367; losses, \$181,946; Continental, \$585,637; losses, \$272,642; Fidelity-Phenix, \$583,162; losses, \$272,642; Fuso Fire and Marine, \$133,253; losses, \$61,971.

Glens Falls, \$454,756; losses, \$287,623; Globe & Rutgers, \$2,001,098; losses, \$1,404,923; Great American, \$677,780; losses, \$395,200; Hanover, \$160,374; losses, \$106,547; Home, \$1,043,147; losses, \$1,043,548; Maritime, \$130,929; losses, \$41,841; Firemen's Fund, \$3,271,076; losses, \$3,240,052; Milwaukee Mechanics, \$195,322; losses, \$121,400.

National Liberty, \$223,716; losses, \$75,525; Newark, \$53,389; losses, \$36,643; New Zealand, \$136,102; losses, \$59,703; National, \$179,048; losses, \$114,278; North British & Mercantile, \$127,329; losses, \$25,258; Norwich Union, \$172,174; losses, \$76,834; North River, \$297,422; losses, \$136,926; Old Colony, \$127,875; losses, \$136,547; Ocean, \$129,029; losses, \$130,894; Providence Washington, \$813,267; losses, \$569,543.

Queen, \$407,047; losses, \$195,316; Royal, \$288,246; losses, \$151,307; Russia, \$200,778; losses, \$106,671; Reliance, \$67,971; losses, \$23,222; St. Paul Fire and Marine, \$632,500; losses, \$581,031; Springfield, \$78,335; losses, \$297,573; Standard, \$1,217,971; losses, \$578,583; Switzerland General, \$440,170; losses, \$251,459; Union of Canton, \$415,377; losses, \$314,799; Universal, \$623,438; losses, \$350,960.

United States Fire, \$484,134; losses, \$300,167; Westchester, \$264,819; losses, \$162,731; Western Assurance, \$131,628; losses, \$128,875; Yang-Tsze, \$231,059; losses, \$158,282; Franklin, \$130,148; losses, \$100,298; American and For-

eign, \$405,639; losses, \$163,823; Home Fire and Marine, \$195,471; losses, \$124,200; Norwegian Atlas, \$64,312; losses \$166,169.

As shown by the above, most of the companies made a fair profit on their underwriting.

The most important factor in underwriting during the past year has been the selection of risks. It generally follows that companies which are conservative and cautious in their underwriting manage to make a fair showing while companies which base their results principally upon a large volume of business do not come off so well. One of the outstanding facts regarding the past year was an unusual lot of poor business floating around, and it is to the credit of underwriters that a large portion of this has never been underwritten.

The average underwriter hates to let a premium go by, and often takes business which is shady, but on which he hopes to win. Less of this business was written in 1923, which would make it appear that underwriters are learning their lesson and careful selection of business will rule. Rates in general have been fairly stable and the only disruption has been the occasional rate cutting orgy of some company that has made up its mind to increase its premium volume.

For the new year, insurance men are optimistic and believe that the market will steadily improve. A number of factors, they point out, are favorable, notably the demand for American products in Japan and various other countries. As every shipping man knows, the world has held off buying certain American goods for a long time and no doubt stocks will have to be replenished despite the deflation of certain currencies.

* * *

Germans Draw Up New War Risk Clause

ARIOT in the opinion of German underwriters is war. The Hamburg Marine Underwriters association has adopted a new war risk clause for marine policies for use in Russia and the Balkan states. This clause reads as follows:

"This policy to cover war risks only. The insurer not to be liable for loss or damage in consequence of riot and civil commotion in a European

country, except Russia and the Balkan states.

"Warranted free of any claim arising from measures which one of several of the allied and associated powers named in the treaty of Versailles, may take with reference to that treaty. The insurer, however, be liable for loss of, or damage to, the insured goods, by such measures, as long as they are in the custody of the shipowner with a view to the carrying out of voyage. Until further notice a premium of $\frac{1}{4}$ per cent to be due."

* * *

Goods Liable to Damage at Japanese Ports

BECAUSE of the chaotic condition of the seaports of Yokohama and Tokio, marine underwriters have found that their liability has been greatly increased. A special committee of the American Institute of Marine Underwriters comprising W. J. Roberts, of the Standard Marine Insurance Co. chairman; H. E. Manee, of Appleton & Cox; T. J. Allen, of Chubb & Son; C. L. Golby, of William H. McGee & Co.; and J. F. Purcell, of Platt Fuller & Co. has been investigating the situation. In order to cope with conditions, the committee has made the following recommendations:

1. The underwriters agree, for an additional premium, to hold their assured covered on shipments discharged outside the breakwaters at Japanese ports.

2. For an additional premium to be arranged, the underwriters offer to hold their assured covered for a certain number of days, as long as the goods are not yet delivered to the consignees, or to the warehouses.

Numerous reports have been received from Japan describing the condition of the waterfront. Few warehouses are left intact. Merchandise is piled up haphazardly on the wharves and is subject to pilferage, destruction by rain, fire, and heavy seas. In some instances, landing stages are sunk and the floors partially under water. The breakwater is materially sunk and leaves the piers open to the ravages of a heavy sea.

The troubles of marine underwriters have not been relieved by the recent decision of the European homebound freight conference to refuse to accept responsibility for cargo after it is

landed from vessels at Yokohama, and to store freight in the open if warehouse room is not available.

American and foreign companies are doing their best to settle promptly claims arising out of the earthquake for which they are legally responsible. The work, however, is impeded through confusion and the making of claims on merchandise which is afterward recovered. The plan whereby the Japanese government would have aided domestic companies by loaning money necessary to pay partial claims and requiring the companies to pay losses although not liable because of the earthquake clause, has been definitely abandoned according to the latest advices received by underwriters in this country.

* * *

World's Vessel Losses Heavier in 1923

THERE were 222 vessels aggregating 489,000 tons lost at sea during 1923, according to the annual report of the Liverpool Underwriters association that has just been received. This is an increase over 1922 when the loss numbered 216 vessels with a tonnage of 407,756; and in 1921 with 323 ships of 479,000 tons. During the past year, 178 steamers and 44 sailing ships were lost. America lost heaviest on sailing vessels, and Great Britain on steamships. The steamships are divided as follows: British, 49; America, 21; Belgium, 2; Denmark, 3; France, 8; Germany, 11; Greece, 5; Holland, 3; Italy, 14; Japan, 20; Norway, 14; Spain, 4; Sweden, 6; other countries, 18.

* * *

Draft New Policy to Cover Lay Up Days

THE American marine insurance syndicate has announced a new policy which reads as follows:

"In the event of the vessel being laid up in port for a period of 30 consecutive days, a part only of which attaches to this policy, it is hereby agreed that the laying up period, in which either the commencing or ending date of this policy falls, shall be deemed to run from the first day on which the vessel is laid up and that on this basis underwriters shall pay such proportion of the return due in respect of a full period of 30 days as the number of days attaching here-to bear to 30.

"Touching the adventures and perils which we, the said assurers, are contented to bear and take upon us, they are of the seas, men-of-war, fire, enemies, pirates, rovers, thieves, jetti-

sons, letters of mart and counter-mart, surprisals, takings at sea, arrests, restraints and detentions of all kinds, princes and peoples, of what nation, condition or quality soever, barratry of the master and mariners, and of all other like perils, losses and misfortunes that have or shall come to the hurt, detriment or damage of the said ship, etc., or any part thereof.

"This insurance also specially to cover (subject to the free of average warranty) loss of, or damage to hull or machinery, through the negligence of master, charterers, mariners, engineers or pilots, or through riots, explosions (whether on board or ashore), bursting of boilers, breakage of shafts, or through any latent defect in the machinery or hull, provided such loss or damage has not resulted from want of due diligence by the owners of the vessel, or any of them, or by the manager, masters, mates, engineers, pilots or crew not to be considered as part owners within the meaning of this clause should they hold shares in the vessel."

* * *

Oppose Bill to Fix New Status for Adjusters

QUITE a lot of opposition has developed to a bill now before the legislature at Albany, N. Y., which seeks to bring adjusters and surveyors within the definition of agents as regards dealing with unauthorized insurance. The Manufacturers Export association has been active in combating the measure and has advised its members that the bill will be particularly severe upon them, as it is often necessary to insure merchandise in foreign countries. The bill would make it a criminal offense to insure merchandise in a company not admitted in the state of New York through the agency of a New York bank, broker, or forwarding agent. The statute would require that the company be entered in New York state, and would not even allow the placing of business in foreign companies legally doing business in some other state of the union.

* * *

New Policy Covers on Delayed Arrival

A NEW form of insurance has just been inaugurated by Lloyds, London. It is called "time-penalty" insurance, and is designed to indemnify the insured against loss sustained owing to the nonarrival of a steamer at a certain port on or before a certain date by reason of a marine or war peril or the breakdown of a vessel.

Up to the present time, only a small volume of this business has been written. One of the most recent policies effected was that of the DAIREN. The insurance was placed to pay on a total loss in the event of the nonarrival of the steamer on or before the specified date.

* * *

N. Y. Wars on Companies Barred by State

SUPT. FRANCIS R. STODDARD JR., of the New York insurance department recently declared war on brokers who place business with unauthorized insurers. Deciding a recent case, Mr. Stoddard said: "I can not find any distinction in the insurance law between a broker who aids in the procurement of reinsurance from Lloyds, or other unauthorized insurers, and a broker who places a direct line with an unauthorized insurer." Superintendent Stoddard immediately afterward made public a warning that he intended to take action against any broker who violates the law, either by placing reinsurance, or direct lines with unadmitted insurers such as Lloyds.

The question of just what to do to stop the placing of insurance in companies that are not admitted has been under consideration for a number of years without anything ever having been done to remedy it. Conferences have been held, resolutions adopted, but the glaring fact that certain coverages can be obtained abroad, and can not be bought here, has always stood in the way of any definite action being taken. Superintendent Stoddard's decision to take action against those who place insurance in nonadmitted foreign companies may have some interesting consequences,

* * *

California Will Fight Temporary Brokers

CALIFORNIA intends to go after those persons who take out licenses to do business simply in order to make some money quickly and are not actively engaged in the insurance business. Considerable hostility has been voiced by insurance agents against the granting of licenses to persons not qualified to handle insurance. Despite the existence of a section in the insurance law describing the licensing of such an agent as being similar to a rebate, licenses have been granted because the statements of the applicant have not been verified. When the applicants seek their new licenses it is the intention of the insurance commissioner to investigate each one,

and weed out all of the undesirable.

Most states now have laws under which an applicant must be versed in insurance knowledge and must devote his entire time to the transaction of insurance. These laws have been sponsored by the insurance fraternity. They are enforced in different degrees in various states, but it appears from the above that California is to become one of the strictest.

* * *

Rules When Carrier Has Custody of Goods

ACCORDING to a decision of the United States district court at New York, goods that have been delivered to a carrier are in his custody, even before they have been actually loaded, and he is liable to damage occasioned by failure to use reasonable care in their protection. It was held that the carrier is at least under the obligations of a warehouseman before loading. In having failed to provide waterproof covers for the goods, he was held responsible and the shipper recovered damages.

At the twenty-third annual meeting of the officials of the Matson Navigation Co. held in San Francisco in February, it was reported that 14,000 passengers and approximately 1,000,000 tons of freight were carried to and from the Hawaiian islands during 1923. A feature of the meeting was the report on the new continuous service bonus, established in the spring of 1923, on which the company has just made payments totaling \$23,188.85. A bonus went to every man in the seafaring personnel who has been in Matson service for more than a year. No changes were made in officials for the coming year, the following being re-elected: E. D. Tenney, president; W. P. Roth, vice president and general manager; A. M. McCarthy, treasurer and F. A. Bailey, secretary.

The steamer *LEVIATHAN* was placed in drydock at South Boston at the end of February for underbody work, cleaning and painting. The great liner was to be in dock for two or three weeks. Bottom plates damaged when the ship grounded in New York harbor in December will be renewed, and the vessel made ready to take her place in service early in April.

Portland, Oreg., reports that 1384 vessels entered and 1393 cleared in 1923. The total tonnage of cargo handled over its docks last year was 3,900,000 net tons against 3,200,000 net tons in 1922. Total lumber shipments were 534,458,423 feet board measure against 337,146,839 feet in 1922.



PORTABLE TRUCK CONVEYOR AS USED IN UNLOADING PACIFIC LINERS YALE AND HARVARD AT LOS ANGELES. SMALL VIEW SHOWS CONVEYOR AS USED IN LOADING RAILROAD CAR

Truck Conveyor Reduces Cargo Handling Time

A portable truck conveyor, designed especially to handle any commodity that can be loaded on a 2-wheel hand truck, has been placed on the market by C. Albert Henshaw, Matson building, San Francisco.

Forty machines of this type are in use in San Francisco bay. The designer states that the steamers *YALE* and *HARVARD*, crack Pacific coastwise liners, work 50 men over two truck conveyors and he claims a labor saving of \$1000 a month results. The steamer *CUBA* required 36 men to work 14 hours to discharge while Mr. Henshaw states this work now is done by 30 men in 10 hours. For work on lighters, marked increases in trucking averages per man have been shown.

These portable truck conveyors are made in different lengths, varying from 15 feet to 40 feet. The smaller sizes are used to load box cars, high trucks or for tiering, while the larger ones are employed to work cargo from side ports, river steamers and lighters.

A patented hook is attached to the axle of the truck which permits the use of a smooth conveyor chain and

eliminates danger of injury to the truckers or the cargo. This hook engages or releases the chain automatically and consequently does not necessitate the employment of experienced labor.

The frame work is galvanized steel. All machinery is fitted with ball bearings and is self-contained. Power is derived from either a Fairbanks Morse ball bearing motor or a Fairbanks Morse gas engine, the conveying chain having three speeds and being equipped with a disk clutch.

In high speed, the conveyor will handle 1000 truck loads or 250 tons per hour on a 25-degree incline. It is claimed to be the fastest miscellaneous cargo conveyor on the market.

A worm screw, operated by a hand wheel, elevates the upper end of the conveyor to any desired height up to 12 feet. At the maximum elevation, a 2000-pound package can be handled in low speed.

The steel steamer *OWEGO*, built at Buffalo in 1887, has been sold to buyers in Foochow, China, who jitted her to leave Seattle with a cargo of flour and salt herring. It is understood that the old steamer will end her days freight-ing along the China coast. For many years, the *OWEGO* was a familiar unit

of the Great Lakes fleet. During the war she was brought out to salt water and remodeled, 40 feet of length being added to the hull. A year ago she came to Seattle from New Orleans but financial difficulties overtook her and after passing through the courts the sale in China was negotiated.

Ship Repair Work Shows 25 Per Cent Increase

Eugene G. Grace, president of the Bethlehem Shipbuilding Corp., made public in February the following facts regarding the operations of the corporation in 1923:

During 1923 the ship repair business of the Bethlehem Shipbuilding Corp., Ltd., showed an increase over 1922 of 22 per cent in number of ships repaired, of 23 per cent in tonnage of ships repaired and of 25 per cent in billings per ship repaired.

The Bethlehem Shipbuilding Corp., Ltd., is a subsidiary of the Bethlehem Steel Corp. handling the shipbuilding and ship repairing work of the corporation in addition to constructing passenger railroad cars, American designed

diesel engines, and special machinery for shipping and industrial purposes.

Shipbuilding has declined throughout the world during the past few years. According to a recent statement by Lloyd's Register, world ship construction for 1923 was less than a quarter of that for the record year 1919 when 7,144,000 gross tons of merchant shipping was sent down the ways.

On the other hand, that the old ships are gradually wearing out is indicated by the steady increase in Bethlehem's repair business. The ships repaired by the Bethlehem plants last year were registered at a tonnage of 9,748,872, or equivalent to 59 per cent of the total merchant marine tonnage of the United States.

The number of the ships repaired in the past three years in the Bethlehem yards with their total tonnage was:

Year	Number of ships	Tonnage
1921	1158	4,674,000
1922	1983	8,005,000
1923	2415	9,748,000

Total 5556 22,427,000

From the point of view of dollars and cents, the above repair work would be about equivalent to the complete con-

struction of 30 steel cargo vessels of an average tonnage of 5000 tons.

During 1923, the Bethlehem company constructed in its various yards 25 steel vessels of 45,854 gross tonnage, of which 15 were for strictly commercial uses, including cargo ships, tankers, ferryboats, barges and car floats.

On Jan. 1, 1924, Bethlehem yards had under construction, or under contract to build for private shipowners, 14 steel ships of a gross tonnage of 17,500.

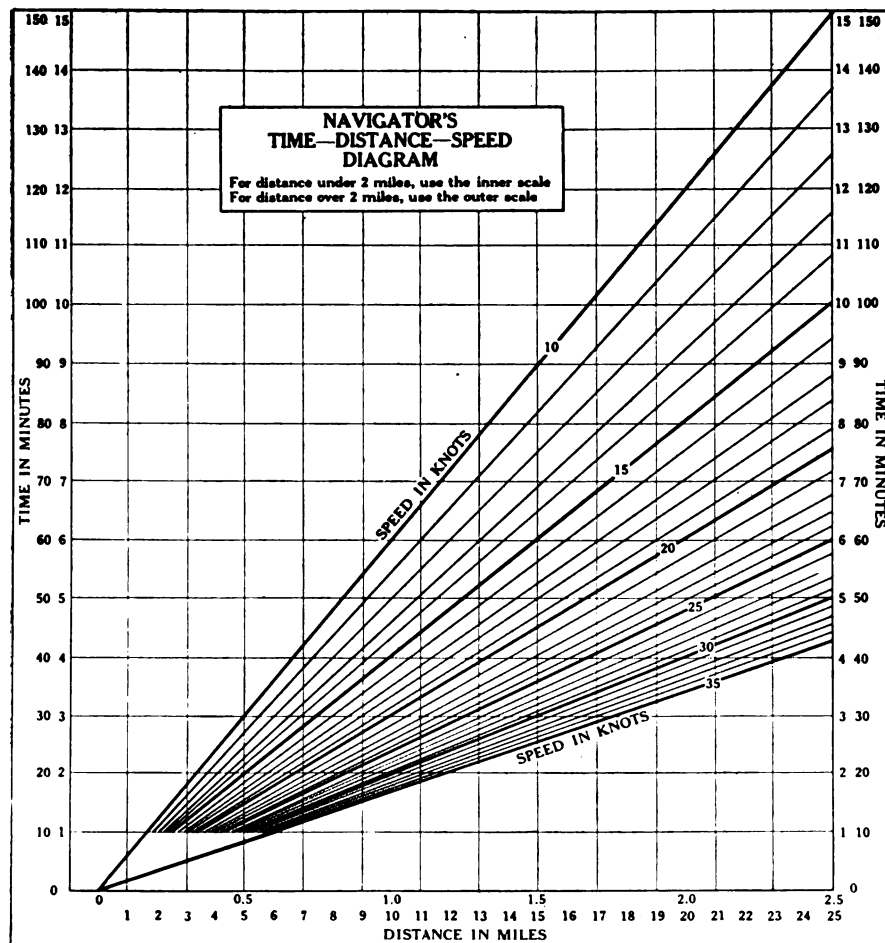
Takes Radio Contract on Fleet of 17 Ships

The Radio Corp. of America, New York, has been awarded the contract for radio service on the fleet of 17 ships owned and operated by the Merchant & Miners Transportation Co., Baltimore. The service will include maintenance, operation, and repair of the standard marine radio equipment installed on board these vessels, and the handling of traffic. The company's vessels are in the coastal service plying between Boston, Providence, Philadelphia, Baltimore, Norfolk, Savannah and Jacksonville and include the steamships PERSIAN, QUANTICO, TUSCAN, ALLEGHENY, BERKSHIRE, CRETAN, DORCHESTER, ESSEX, GLOUCESTER, GRECIAN, HOWARD, INDIAN, JUNIATA, KERSHAW, MERRIMACK, NANTUCKET and ONTARIO.

Vessels of the coast guard service, with headquarters at Seattle, are to perform patrol service in connection with the around-the-world flight of the four army airplanes which will hop off from Seattle April 1. The guard tenders will patrol the waters from Alaska to the coast of Asia carrying supplies to the airplanes and prepared to render assistance. While one tender steams with the airplanes, the vessel at the next station will proceed toward the planes thus working out a convoy program that is expected to be of real value.

Once operated as a slave ship in the South Seas, the famous schooner MAID OF ORLEANS has been sold to an Arctic trader who will use her as a supply vessel in the far north with headquarters at Coronation gulf, far beyond Point Barrow. In recent years, the MAID OF ORLEANS has been operated in the codfishing industry. She was built at San Francisco in 1882.

The Admiral line, Seattle, has introduced an innovation on its coastwise steamers in the person of a director of entertainment whose duty it will be to initiate and supervise deck games, dances and other forms of amusement for the passengers.



HYDROGRAPHIC OFFICE DIAGRAM WHICH SHOWS WITHOUT OTHER CALCULATIONS DISTANCE COVERED AT VARIOUS SPEEDS AND IN ANY TIME INTERVAL

Operates First Molasses Tanker

American Sugar Refining Co. Is Owner of Big Vessel
for Special Industry—Has American Classification

IN ONE particular field American shipping has not been content to take second place to any nation. That is the industrial ship. Specialized ship construction for the accommodation of a particular trade or for the transportation of one type of commodity has been carried forward with significant success by the various oil companies, the Union Sulphur Co., and the United Fruit Co. The American Sugar Refining Co., 117 Wall Street, New York, is now established in this class.

This company had for some time been interested in shipping, but not until after the war did it do more than charter vessels. The company began by purchasing a small tank vessel built in 1902 by the Craig Shipbuilding Co., Toledo, O., for the Sun Co., Chester, Pa. This ship was brought to the Atlantic and 40 feet added to her length and then placed in trade to bring molasses from Cuba to the United States. The vessel is known as the *DULCINO* of 2951 gross tons. It was the first time that a vessel was acquired for the distinct purpose of transporting molasses in bulk.

Then later the sugar company let a contract with the Staten Island Shipbuilding Co., New York, for the construction of a tanker to specialize in the transportation of molasses. This ship, specially built for the trade, represents some interesting innovations in ship construction and marks a new field

for American shipbuilding designers.

Although built primarily for the liquid cargo trade, the *DIXIANO*, has been largely engaged in the raw sugar trade. She took sugar from Boston to London on her first trip and carried a second cargo of sugar to London from Brooklyn. After that, she was placed in the raw sugar trade between Cuba, and New Orleans, Philadelphia and Baltimore. The older ship, the *DULCINO*, brought up the first bulk molasses cargo from Cuba delivering it at Baltimore. The *DIXIANO* has had in one cargo one-half bulk molasses and one-half raw sugar and has delivered both kinds in excellent condition and with a minimum handling charge.

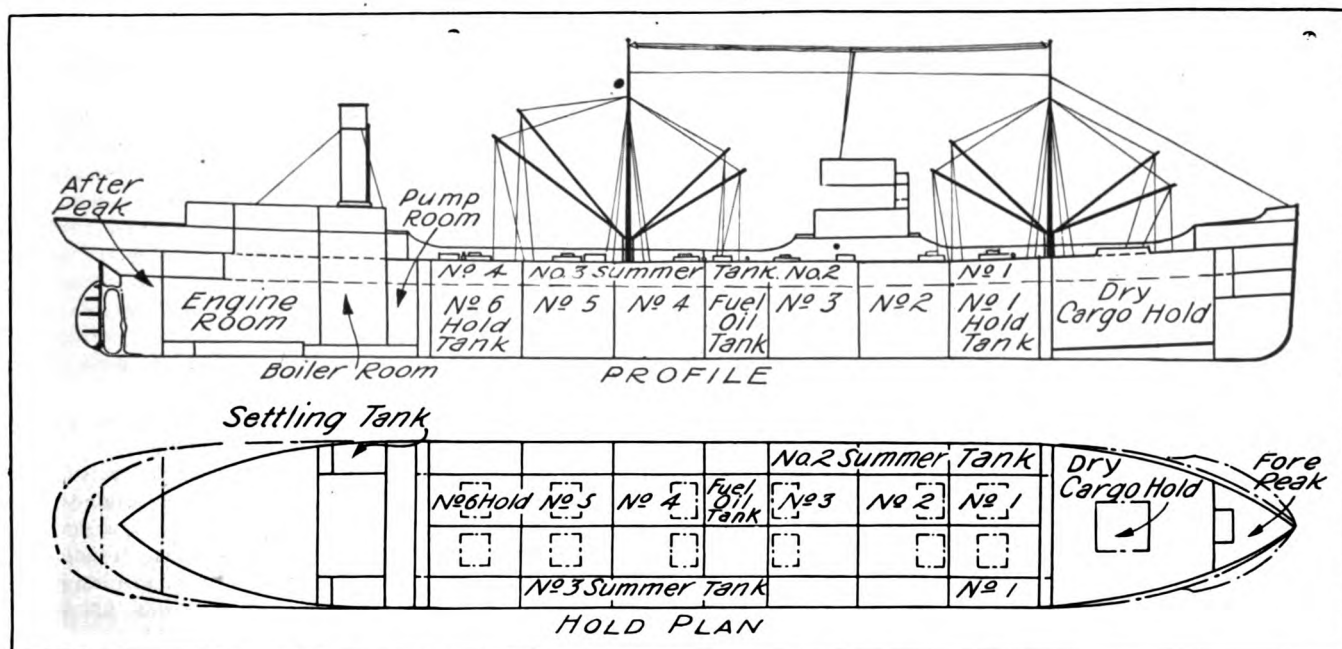
The *DIXIANO* is of 4323 gross tons and was registered June 25, 1921. The *DIXIANO* carries her engines aft like the ordinary oil tanker while her molasses tank holds are forward of the cofferdam which separates the engine, boiler and pump rooms from the body of the ship. Another cofferdam is placed forward where the prow begins to turn, and forward of this cofferdam is a dry cargo hold. Fuel oil for the engines is carried in tanks placed midships. This midship placement of the fuel oil tanks was determined upon in order to protect the trim of the vessel when underway.

It was necessary to equip the ship with especially strong cargo pumps that molasses in bulk could be handled. The hatches to the tank holds are large

enough to admit dry cargo for transporting raw sugar. These hatches, however, are kept screwed tight and a smaller hatch, in the center of the larger hatch, is used when liquid cargo is being handled. Forward of the first cofferdam 16,456 cubic feet of grain or 13,335 cubic feet of baled goods may be carried between decks, and 39,535 cubic feet of grain or 38,112 cubic feet of baled goods may be carried in the dry cargo hold.

If other than liquid cargo is carried in the body of the ship, her tank holds would accommodate 186,734 cubic feet of grain or 179,116 cubic feet of baled goods. These are important considerations as circumstances may arise when it would be desirable to carry other than molasses in the vessel and the company has made provision for such a contingency. If other cargo is carried, it will be necessary, of course, to steam out the tank holds before molasses could be transported again.

The American Sugar Refining Co. is now established as a full fledged vessel owner and operator, through its subsidiary, the American Sugar Transit Corp. This venture is no longer an experiment for the sugar company and there is every reason to anticipate continued success. The present fleet consists of five vessels: *DULCINO*, liquid cargo, bought and rebuilt, 1919; *DIXIANO*, liquid and dry cargo, built, 1921; *DOMINO*, dry cargo only, bought, 1922; *DELECTO*, dry



PLAN AND PROFILE OF SPECIALLY DESIGNED MOLASSES TANKER

cargo only, bought, 1923; DEFACTO, dry cargo only, bought, 1923.

The DIXIANO measures 375 feet 9½ inches in length overall, or 360 feet in length between perpendiculars. She has a breadth of 50 feet and a depth of 29 feet. She is a single screw ship, equipped with reciprocating engines and burns oil. She was built under special survey to A-1 class in the Ameri-

room, wireless room and battery room.

Accommodations are provided in the poop deck space for sailors, firemen, carpenter and boatswain, quarter masters, storekeeper, pumpman, wipers, petty officers' mess, crew's mess, cooks' and mess boys' rooms, stewards' storeroom, cold storage rooms, toilets, etc. A steel deck house on the poop deck accommodates the chief engineer, as-

draw from the cargo holds and discharge through 10-inch pipe running fore and aft on the upper deck on the port side with discharge outlets at the forward end, amidships and at pump room. Not only the cargo pumps, but the discharge cargo pipe, fittings, etc., are capable of pumping against a head of 250 pounds. The discharge pipes on deck are fitted with the necessary flanged gate valves and blank flanges for the hose connections. The piping in the pump room is arranged so that the pumps can either draw from the deck connections and discharge to the tanks through the suction lines or draw from the tanks and discharge through the deck connections. Strainers are fitted to the cargo lines and stripping line in the pump room.

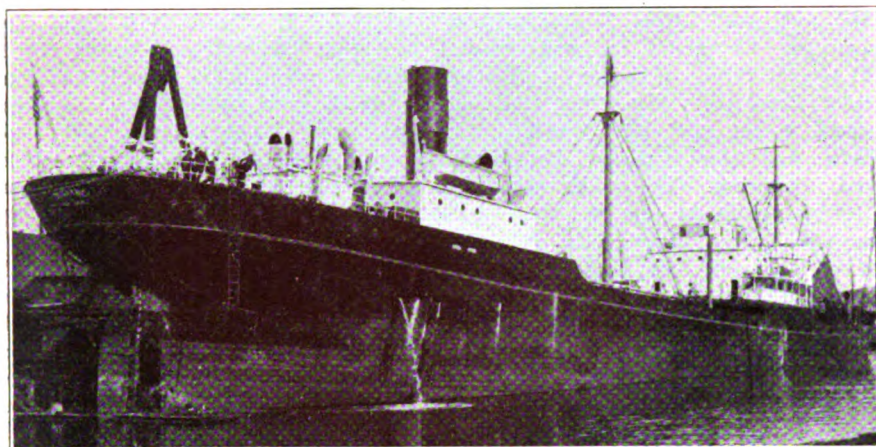
A sea valve with the necessary sea chest, strainer, etc., is fitted in the way of the pump room so that the cargo tanks can be flooded through the suction pipe. The deck connections are arranged so that either pump can discharge separately or together to the deck connections. Six-inch suction pipes with the necessary flanged gate valve brass fitted, are installed in each of the summer tanks and connected to the main cargo pumps and stripping pump. A 6-inch stripping line is installed in each of the cargo tanks and cofferdams, with connection to the stripping pump in the pump room with a discharge overboard and a cross connection to the main cargo discharge line, and also a cross connection to the suction line from the summer tanks. This stripping line, where passing through the fuel oil bunker, has a connection for pumping out fuel oil.

The cargo oil piping is of the standard black wrought steel with cast iron screwed flanges. The discharge lines are of heavy pipe to stand a pressure of 250 pounds.

The hatches to the tank holds are so constructed that they are suitable for the carrying of either molasses, oil or general cargo. The hatch covers are of steel, suitably stiffened and bolted to the hatch covers with oil tight joints. On top of these hatch covers are constructed suitable hinged hatch covers. A 10-inch composition hand pole is fitted in each of the hinged covers. Hinged oil tight steel hatch covers are fitted over all summer and fuel oil tanks.

An anchor windlass is located on the forecastle head with an engine on the same bedplate. There are 10 steam winches of the National Hoisting Engine Co.'s make, for operating cargo lifts. One steam capstan for warping the vessel is fitted aft on the poop deck with engine.

The main machinery consists of a



REMOVING PROPELLER BY TRIMMING VESSEL SUFFICIENTLY TO BRING STERN OUT OF WATER

Bulk molasses carrier DIXIANO which has hatches so designed that she can carry solid cargo. She has had one-half liquid and one-half solid cargo on the same voyage. Raw sugar generally makes up the solid cargo.

can Bureau of Shipping, and equipped to meet all the requirements of the United States steamboat inspection rules.

The ship has a straight stem and elliptical stern, and is built on the Isherwood longitudinal system of framing. She has two steel decks with a raised poop, forecastle, bridge, with bridge house over and a house on the poop deck. There is a double bottom under the machinery space divided into compartments for carrying feed water. The hold is divided into six tanks for carrying oil or molasses in bulk or general cargo with a fuel tank located between cargo tanks 3 and 4. The center line bulkhead extending to the upper deck divides the tanks into port and starboard compartments, with an expansion trunk between the main and upper decks for the full length of the tanks. The wing spaces between the main and upper decks are divided into four summer tanks.

The DIXIANO is rigged with two steel pole masts and two steel samson posts. Accommodations are provided in the steel deck house amidships, which is raised up on a level with the forecastle deck, for dining saloon, pantry, officers' rooms, wireless operators, linen locker, deck office, bath room and house for the accommodation of the captain and the owner. A wooden house on top of this house has been constructed for the pilot house, chart

sistant engineers, oilers and galley.

On the lower deck abreast the engine and boiler casing, is located settling tanks, fresh water tanks, refrigerating machine, engineers' storeroom and workshop. Under the forecastle deck is provided a hospital with the required number of berths, a paint and oil room, lamp room, storeroom and carpenter shop.

Discharge Through 10-inch Pipe

The pump room, located just forward of the fireroom, is fitted with two cargo pumps and one stripping pump. The hatch for the pump room is extended to the poop deck with a skylight over. Access to the pump room is had by means of steel doors, one on the port and one on the starboard side through the casing. The cargo pumps are 200-ton per hour steam driven duplex brass lined double acting, capable of pumping against a head of 250 pounds pressure. Control rods are installed for operating the pumps from the deck. The suction system consists of 12-inch mains running on each side of the center line bulkhead of the vessel with a 10-inch branch taken off to each main cargo tank. Each suction to the tanks is fitted with a flanged gate valve, brass fitted, and provided with the necessary gear for operating it from the deck, with brass name plates on deck, suitably marked.

The cargo pumps are arranged to

3-cylinder triple expansion reciprocating engine of sufficient power to give the vessel a speed of 10 knots loaded at 23-foot draft, under normal sea conditions. The engine is 23 x 39 x 66 x 42-inch stroke of the 3-cylinder vertical inverted direct acting Stephenson link type. It is built for a piston speed of about 595 feet per minute at 210 pounds boiler gage pressure and 80 revolutions per minute. It indicates approximately 2000 horsepower under normal conditions without live steam in the receiver.

Steam is supplied by two single end Scotch boilers, equipped with forced draft system and fitted to burn oil. The boilers are arranged for one fire-room and connected by uptakes to a single stack. The usual auxiliaries are provided. The boilers have a total heating surface of about 6000 square feet and are built for a working pressure of 210 pounds per square inch. They are 15 feet 3 inches in diameter by 11 feet 3¾ inches over the bottom heads. Each boiler is fitted with three Morrison suspension furnaces with separate combustion chambers for each furnace.

The boilers are fitted for burning oil with White mechanical atomizing burners. A horizontal duplex pump is installed in the fireroom for pumping from fuel oil tanks and discharging to settling tanks and overboard. For handling the oil to the burners two horizontal duplex pumps are located in the fireroom. These pumps draw from the settling tanks and discharge through strainers and heaters to the burners. There are two White fuel oil heaters and duplex suction and discharge strainers in the oil lines so arranged that any strainer can be cleaned without shutting down the pumps.

The propeller is right hand, of the solid true screw type, four bladed, about 14 feet in diameter. It is of manganese bronze with blades well polished.

At a meeting of the governing board of the Maritime association of the Boston chamber of commerce held in February the following were elected members: John G. Fall & Co., Raymond & Whitcomb Co., Crandall Engineering Co., Boston Merchant Marine Scaling Co., William Wallace & Co., Fort Hill Press and F. H. Lucy, all of Boston.

Hamburg, Germany, shipping is running ahead of the prewar totals. In 1923, arrivals were 13,080 ships of 15,350,000 net tons; departures 16,140 ships and 15,550,000 net tons. In 1913, arrivals were 12,675 ships of 11,890,000 net tons and departures 14,130 ships of 12,130,000 net tons.

New Lightship Is Ready for Service

Business of the seas is not always confined to vessels which travel from port to port with cargo and passengers. There is a type of vessel which rides at anchor year in and year out, but which nevertheless has an important task to perform in aiding world's shipping. This is the lightship which

freight transhipped at Seattle from trans-Pacific steamers. High grade cargo continues to move overland by rail but slow freight is being attracted to the all water route. Recent cargo brought to Seattle from Hongkong by the British steamship PHILCETES was transhipped to the steamship ROBERT LUCKENBACH, being landed in New York 54 days from Hongkong or 41 days from Yokohama to New York.



NEW NANTUCKET LIGHTSHIP IS LATEST DESIGN OF VESSEL WHICH MUST WARN NAVIGATORS OF THE TREACHEROUS SHOALS NEAR WHICH IT ANCHORS

is so frequently seen marking the shoals and dangerous points around the islands of the North Atlantic coast.

The illustration shows the new Nantucket lightship which was recently completed at the plant of the Bath Iron Works, Bath, Me., and which already has taken up permanent anchorage off the island of Nantucket. This lightship is a staunchly built vessel designed to weather the highest seas of the North Atlantic. She is completely equipped and while expected to stay peaceably in one spot, is capable of developing about 8 knots under her own power. Cabin accommodations are modern and homelike, and though the propeller will not ordinarily revolve, the boilers will be kept fired to provide heat for the crew of eight men which will stand guard to warn ships of the presence of the treacherous Nantucket shoals.

The Wilcox-Crittenden Co., Middletown, Conn., long established in the manufacture of marine hardware, recently opened its large factory addition.

Intercoastal steamship lines are handling increased quantities of Oriental

Late Marine Patents

Copies of any one of these patents can be obtained by forwarding 25 cents in stamps to Siggers & Siggers, National Union building, Washington, and mentioning MARINE REVIEW.

1475290—Boat launching device. Charles F. Ellison, Cristobal, Panama canal zone, and Edward F. Beyer, New Orleans.

1475460—Stabilized ship. Herbert H. Thompson and Alexander E. Schein, Brooklyn, N. Y., assignor to the Sperry Gyroscope Co., Brooklyn.

1475617—Lifeboat release. S. E. Albinn, Seattle, assignor to Mayer Life Boat Co., Inc., Seattle.

1475695—Means for controlling and reversing ships provided with propellers. Sidney Golden, Altringham, England, assignor to George Flinders Jarvis, London, England.

1475833—Boat propelling device. Clifford A. Joyner, Muncie, Ind.

1476387—Life saving apparatus. Frederick W. Atwell, Lake Villa, Ill.

1476763—Boat. Karl A. Moen, Vik, near Grimstad, Norway.

1477200—Boat propeller. Robert R. Whiting, Darien, Conn.

1477487—Attachment for boats. John Thomas Hisert, Chicago.

1477627—Life saving and sporting device. Omer F. Campbell, Fresno, Cal.

1477646—Ship. Myron F. Hill, New York.

1478351—Life preserver. Laughlin James O'Shaughnessy, Halifax, N. S.

1484410—Marine vehicle. Otto S. Pridgen, Richmond, Va.

1481906—Magnetic shipbuilding device. Archibald J. Jackson, Fort Ogden, Fla.

Will Save by Use of U. S. Ships

Shippers Can Obtain Reduced Freight Rates
by Routing Their Goods on American Vessels

BY E. C. PLUMMER
Vice Chairman, U. S. Shipping Board

THE merchant marine act of 1920 provides that railroads shall make no reduced rates on through shipments of exports or imports, unless the vessels upon which the goods are to be carried to foreign ports, or upon which they have been brought into the United States from foreign ports, are American.

This section of the law would have gone into effect more than three years ago had not the shipping board caused its suspension.

The board's action in causing this suspension was necessitated by the fact that in 1920 we had not sufficient American tonnage adequately to serve the trade of this country. With the completion of our World war fleet and the establishment of efficient ocean services under our flag, that condition disappeared. For more than two years there has been adequate service by American shipping for the foreign trade of this country. The board, however, continued to hold section 28 of this law in suspension in order to give our competitors every opportunity to adjust themselves to the active presence of American ships; to give the interstate commerce commission ample time to make such rearrangements as might be required to perfect the railroad rate system of this country so that all United States ports might enjoy equally those advantages accruing from low export and import rates when American ships were employed; and to demonstrate fully the ability of American vessels to handle the bulk of our foreign commerce.

Move Will Be Fought

Here it is important to make clear exactly what the recent action of the shipping board in connection with this section 28 means.

It is not an aggressive movement on the part of the board. On the contrary, the board merely has withdrawn its suspending certificate, and permitted the law to go into effect in accordance with the mandate of congress. In reality it is congress that is acting now—not the shipping board.

This procedure of the board, having a tendency to benefit American ship-

ping, will of course be subject to all sorts of unfair criticisms. Among those already appearing is one to the effect that there will not be sufficient American tonnage properly to care for our traffic. This claim is merely a profession of ignorance. There is nothing in the law now permitted to become active which prevents any or all of the exports and imports of this country traveling in foreign ships. If an exporter prefers to use a foreign ship, that is his privilege. If his love for the foreigner is such that he wants his imported goods delivered to him by alien craft, there is nothing in section 28 to deprive him of that pleasure.

Ample Tonnage Is Ready

The only changed condition produced by the release of this law is that if his through shipments are handled by American vessels he gets a lower railroad rate for such goods, when they are being brought from the interior to the seaboard, or are being carried from the seaboard to interior points, than he can get if he patronizes foreign ships. There will be just as much tonnage available with section 28 active as there is with section 28 passive, but a lower railroad rate will be available for patrons of American ships.

Another claim is that this section will upset our railroad rate structure. The claim is absurd but, like so many other claims affecting American shipping, it is boldly made either because of ignorance on the part of the claimer or assumed ignorance on the part of the listener.

Some of our ports already have export and import rates. They are ready to do business now. Therefore, it is necessary merely to establish similar rates at other ports to put all the ports of this country on an equality. Such action in no way affects established rate structures, because it does not change them in the least. It merely provides for a lower rate on through shipments, to and from foreign ports, handled by American vessels.

This rate might be arrived at by merely providing for, say, a 10 per cent reduction from domestic rates.

That simple change certainly would not affect the general rate structure, but it would give a financial reason for patronizing American vessels in our foreign trade, and solve the problem without resort to "higher mathematics."

But even if important changes were involved, even if rates would need to be readjusted, this can not affect the fact that congress has issued its mandate. That mandate can not be disregarded or defeated by any administrative department of the government merely because it involves work.

Some of those, who always are searching for obstacles to throw in the way of any attempt to aid American shipping, are advising that hearings should be held before this section of the law goes into effect. There is nothing to hear. Congress enacted that this preference should be given to American ships. Now that the shipping board has withdrawn its suspending order, the law automatically goes into effect.

It will be recalled that more than a year ago, the board held public hearings in different parts of the country to satisfy itself as to transportation facilities and to give exporters and importers full opportunity to prepare for this improvement. It did not ask the people to come to it; it went to them. There is no excuse for further delay.

Result of 2-Year Test

During the two years the board has held section 28 in suspense, its operating department has co-operated in every way with foreign ships. It has entered into and faithfully respected the terms of all rate conferences. It has provided an abundance of tonnage and given all shippers every opportunity to patronize American craft on the same terms as offered by the foreigner. It has given a 2-year test to that threadbare asseveration that ocean commerce is free to all and equal service will mean an equal share of the business.

As a net result of this very thorough test we find that our ships last year handled but 24 per cent of our transoceanic exports and but 17 per cent of our corresponding imports—the percentages are somewhat lower today.

It is suggested by some that if Americans would show the same preferences for home ships that foreigners show for theirs, section 28 would not be required. With equal logic it might be said that if all the people would show a due respect for law, there could be a material reduction in the number of policemen employed. One trouble with both these propositions is that they ignore existing facts.

But the greatest fault with this proposition that we try to get along without aid for our ships is that it overlooks the main purpose of the merchant marine act of 1920. The end sought to be attained by that law is an American merchant marine privately owned, not that the government should continue to run ships and the public keep paying their losses.

Now it costs more to operate a ship under the American flag than it does under foreign flags. Since the statement of P. A. S. Franklin that "the MINNEKAHDA is costing us twice as much in wages under the American flag as under the British flag, and she has not a single, solitary advantage," there is less foolish denial of that fact. But its importance is sometimes forgotten.

Section 28 is designed to help overcome this handicap. It is the same provision of law which did so much to give Germany her great merchant marine.

No nation raised the question of treaty rights while Germany was enjoying the advantages of this legislation. Germany realized its value and proceeded to use it. It will be interesting to discover what attitude will be assumed now that the United States is to be the beneficiary. It will be indeed a remarkable incident if semi-Americans let an opportunity like this go by without raising an objecting voice.

Once more let me recall this fact: Congress has declared its aim to be a merchant marine sufficient to handle a major portion of the foreign commerce of the United States.

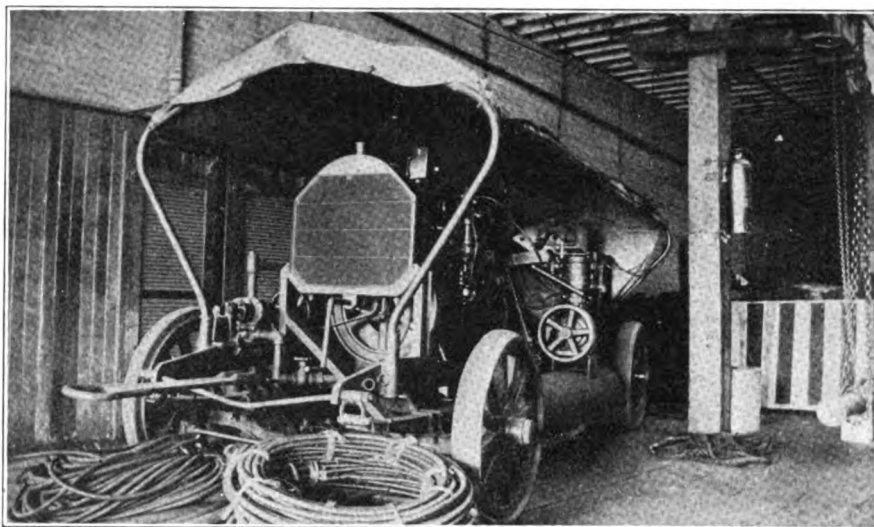
It has recognized that only by government aid can such a merchant fleet be maintained.

By the act of 1920 it provided certain aids for the merchant ships of this country.

Section 28 is one of those aids. It is law and as law should be enforced.

The shipping board now has done its part to have it enforced.

The last of the 18 German vessels interned at Santa Rosalia, Mexico, at the outbreak of the World war, the big 2200-ton sailing ship REINBECK, has been taken over by the Robert Dollar Co.,



WELDING UNIT EQUIPPED TO MEET EMERGENCY CALLS FOR QUICK REPAIRS ON VESSELS AT SAN FRANCISCO

and towed to San Francisco. After being overhauled the bark, like the other vessels of this type in the Dollar company's fleet, will be placed in the off-shore lumber trade to the Orient.

Orders Ferry Boat

The joint highway committee of the Columbia and Sauk county boards of supervisors, with headquarters at Baraboo, Wis., has accepted the bid of the Dubuque (Ia.) Boiler & Iron Works to furnish a gasoline engine driven ferryboat, of steel construction, capable of carrying 12 automobiles besides passengers and freight, for use on the Wisconsin river at Merrimac, Wis., where crossing with a permanent bridge is not feasible.

In the first 11 months of 1923, the United States shipped 1,450,521,744 gallons of fuel oil for bunkering purposes. The United Kingdom shipped 245,544,302 gallons. The comparative figures for the similar period of 1922 were 1,219,335,306 and 153,559,909 gallons. In coal, the positions were reversed. The United Kingdom in the same periods shipped 16,703,713 and 16,805,550 long tons respectively. The United States shipped 4,236,688 and 3,807,819 long tons respectively.

When the coasting steamer COLUMBIA went ashore on Coos bay jetty in February, 53 persons aboard were rescued by means of the breeches buoy. No lives were lost but the steamer has been abandoned as a total wreck. United States inspectors disciplined the first officer for alleged faulty navigation.

The Merchants & Miners Transportation Co., Baltimore, announces a special rate on import jute shipments from Baltimore to Savannah, Ga.

Portable Welding Outfit Used on Frisco Bay

This truck and portable arc welding outfit as illustrated acts just like a fire engine in an emergency. It is ready at a minute's notice to be hitched to an automobile and rushed to any point along the San Francisco waterfront for the purpose of making quick repairs to vessels. It can be delivered to any point along the waterfront and set up ready for operation in 30 minutes.

The equipment consists of a 15-kilowatt, gas engine driven, portable arc welding outfit, with several hundred feet of cable lines so as to be able to reach any part of a ship. The rig is equipped with a hoisting shackle so that the entire outfit can be hoisted aboard ship if necessary.

Power is supplied by a 30-horsepower gas engine operating at 650 revolutions per minute. It is direct-connected. The fuel tank is removable and is taken away from the ship or pier at night so as to avoid the possibility of an explosion. This tank sets in a cradle and can be easily picked up and carried away. A small pump is installed near the engine and in case the engine gets too hot this pump is started. It is belt driven from the crankshaft. A long line of hose is connected with the pump and water if needed is pumped from the bay for cooling the engine.

The brass foundry of the William Cramp & Sons Ship & Engine Building Co., Philadelphia, has booked a number of orders recently. These include propeller blades for the steamships SEATTLE SPIRIT, WEST CALUMB, WEST IRA, WEST IRIS, PATRICK HENRY, ARCTURUS, CUL-

BERSON, WEST HARDAWAY and E. A. MORSE, all of the shipping board fleet. An order has also been received from a private steamship company for a propeller wheel 15 feet in diameter and weighing about 15,000 pounds, to be cast of manganese bronze. The same shipowner also placed an order for four propeller blades to be cast of a special bronze. The tensile strength of these blades, which are for a wheel 18 feet in diameter, will be 110,000 pounds per square inch, a severe specification.

Grain Ships Delayed at Port of Vancouver

Congestion at the grain terminals at Vancouver, B. C., has been so aggravating during the present season that a grain clearance board has been formed. The government has been requested to vest this organization with power to handle the grain export situation with reference to the unloading of cars, issuing priority permits to steamers and otherwise to relieve a situation that has

given the port a unenviable name and caused much delay to shipping. Instances are cited where large grain carriers have been delayed from 5 to 15 days awaiting berth.

By a Supreme Court decision, rendered on a case initiated in the state of Washington, the act of congress making state compensation laws applicable to long-shoremen working on vessels in navigable waters, has been declared unconstitutional.

Net Clears Channel, Saves 95 Per Cent

ENTRANCE to Vancouver harbor, B. C., was recently made easier by dredging to a depth of 35 feet at low tide and widening the channel to 900 feet on the 35-foot contour at the narrowest point. On sweeping the channel after dredging was completed to ascertain if any high spots remained, numerous loose boulders were found in sizes ranging up to 5 or 6 feet in diameter. After removing some of these with the aid of a diver, a much quicker and less expensive means was devised by using a net made of wire cable and operated from one of the snag boats of the dredging fleet.

Difficulties found at first were that the heavy current in the narrows, sometimes as much as seven knots per hour, made operations with a diver slow and expensive. A diver could work only at slack water periods or when there was little variation in the tides. The most favorable tides oc-

curred only two or three days each month and at each of these tides he could work under water only one hour. In ordinary tides, the variation of slack water is only a few minutes. Under these conditions, the removal of two or three boulders per day was the best that could be done even under favorable circumstances.

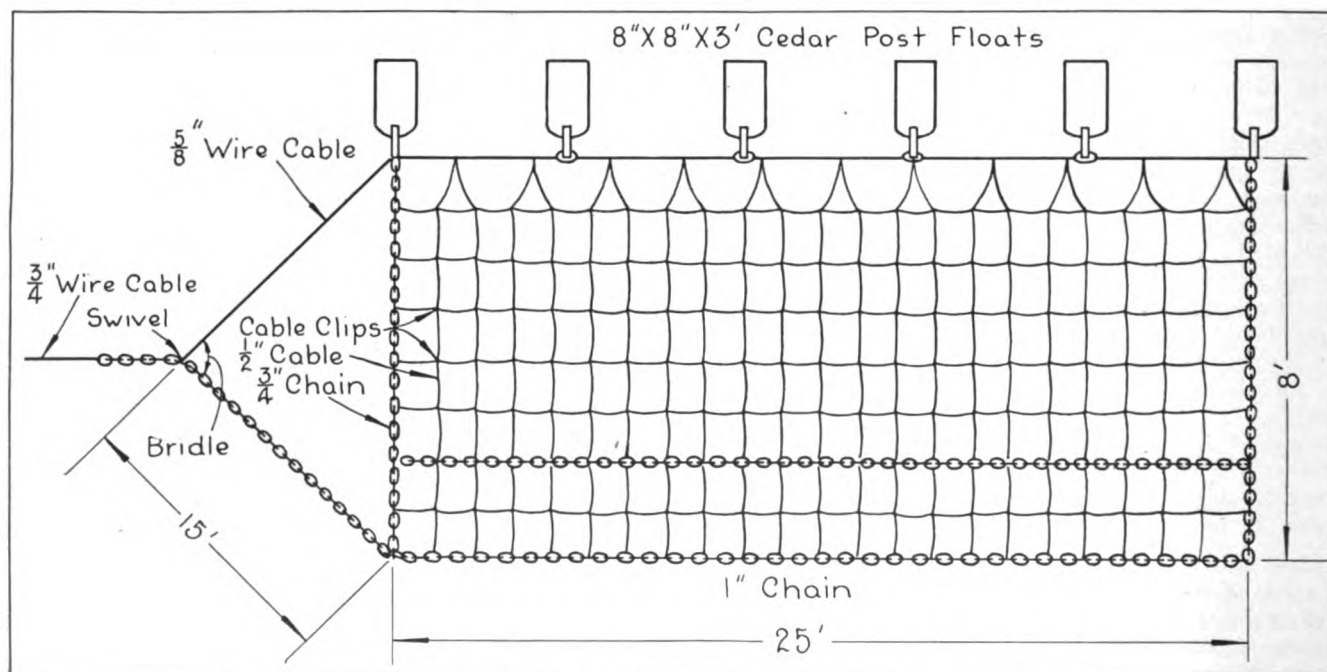
After a total of 16 working days with a diver in the course of which 19 boulders were removed, it was figured that the cost for dredging, crew, equipment, diver and all incidentals totaled \$2000 or \$105 per boulder. Efforts were then made to find a better method of carrying on the work and the idea of a drag net was developed.

The drag net is made of $\frac{1}{2}$ -inch galvanized wire cable, clipped together to give a 1-foot mesh. The net is 25 feet long and 8 feet wide. The chain at the bottom gives weight to the lower edge and like the chains at the

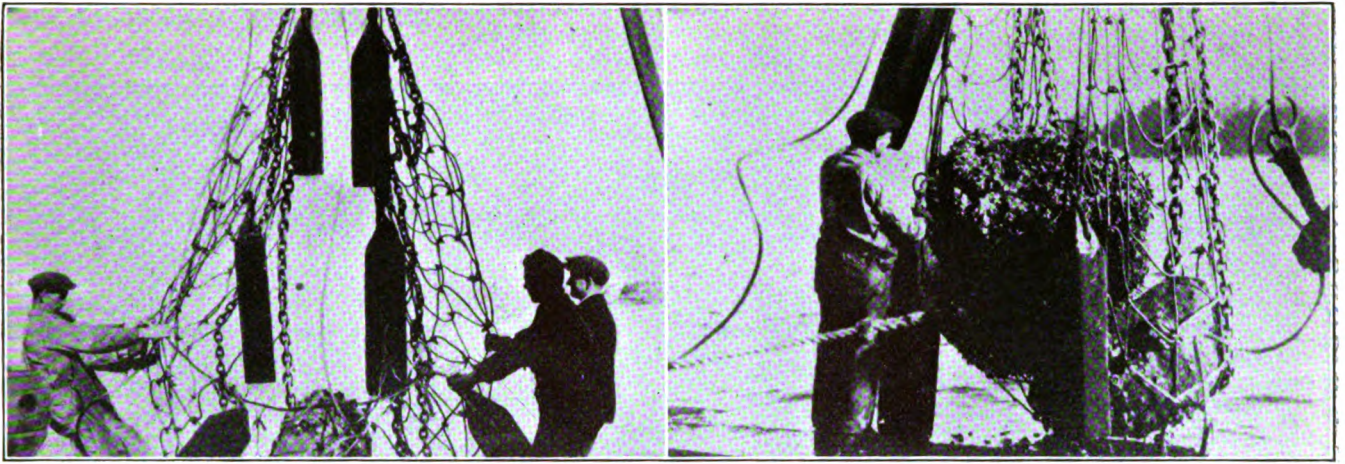
ends affords a convenient means of edging off the net as the cable is woven into the chain links. A $\frac{5}{8}$ -inch cable was used for the top to keep the top as light as possible.

The top cable and the bottom chain are continued beyond the ends of the net to form a bridle ending in a swivel 15 feet from the net proper. From this swivel, 150 feet of $\frac{3}{4}$ -inch cable runs to the winch on the snag boat by which the net is dragged along the bottom.

Six floats made of dry cedar, 8 x 8 inches in section and 3 feet long, give a buoyancy of 300 pounds in all. They are fastened at equal distances along the cable at the top of the net. This is the amount of flotation calculated to hold the upper 6 feet of the net in a more or less vertical position while still allowing the 2-foot section between the chains at the lower edge to lie flat on the bottom. This is desired so that when a boulder is en-



CABLE NET WHICH CLEARED CHANNEL OF BOULDERS AT 5 PER CENT OF COST OF USING DIVERS



LARGEST BOULDER CAUGHT WEIGHED 16 TONS. 526 BOULDERS WERE REMOVED IN 25 DAYS AGAINST 19 IN 16 DAYS WHEN DIVERS WERE USED

countered the whole of the net will not drag under it, the top being brought forward by the $\frac{5}{8}$ -inch wire rope which has the same length as the bottom 1-inch cable. Between the top cable held up by the floats and the chains at the lower edge, a bag or sling is formed which serves to catch and retain the boulders.

The dragging is done by propelling the snag boat either up channel or down, with a fixed length of main-haul cable paid out and held well out toward the end of the outriggers by tension in the out-haul cables.

Men stationed on the outriggers can tell by the tension on the lines when a boulder has been caught. With a boulder in the net, the boat is stopped and the out-haul lines are let go. The two main-haul lines from the net are then thrown over the bow and the net is hauled up by the winch until the swivels are on deck. The main tackles in the shear legs can then be hooked into the swivel ring and the net raised from the bottom and swung in on the deck. After several boulders have been taken aboard, the boat is run to the dumping ground and the boulders put overboard.

The largest boulder brought up weighed 16 tons and its diameters were approximately 6 x 8 x 6 feet. The sizes ranged from this all the way down to the smallest that the mesh of the net would retain. The greatest number brought up at one lift was 10, which varied in size from 1 foot up to 3 feet in diameter. As many as 30 boulders have been brought up in one day and of course in many drags, no boulders were caught.

In preparation for the work of boulder removal, the channel bottom was surveyed and the location of the boulders charted. The best practical means of marking the location in the channel, as guide for the work of the

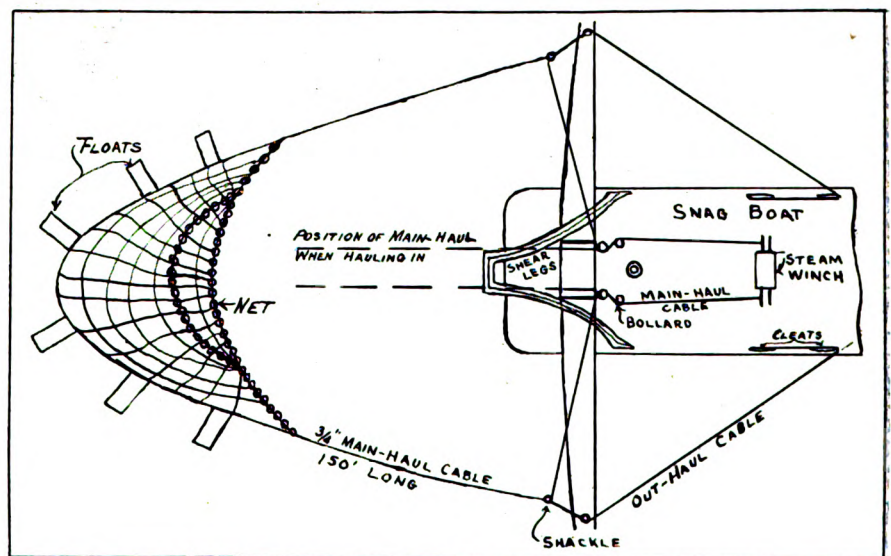
snag boat, was by means of range flags on the shore. As no range flags up and down the channel could be placed, it was, at best, difficult to drag any exact spot that could be indicated only by cross channel ranges, particularly when the current was swift.

However, 625 boulders were removed with the net in about 25 working days. The total cost of the operation was \$221 for materials for the net and \$100 time for the crew of the snag boat while making up the net, plus the \$100 per day snag boat charge for the 25 working days. This totaled \$2821 in all, or \$5.35 per boulder, which is

Orders Largest Single Acting Diesel Engine

Sulzer Bros., the Swiss associates of the Busch-Sulzer Bros.-Diesel Engine Co., St. Louis, have received orders for marine diesel engines totaling 9670 brake horsepower for a new passenger liner of 21,200 tons displacement for the Stoomvaart Maatschappij Nederland, of Amsterdam. This vessel, being built at St. Nazaire, France, is 540 feet long, 67 feet 9 inches beam and 38 feet 6 inches deep. Her speed will be about 16 knots.

The machinery consists of two main



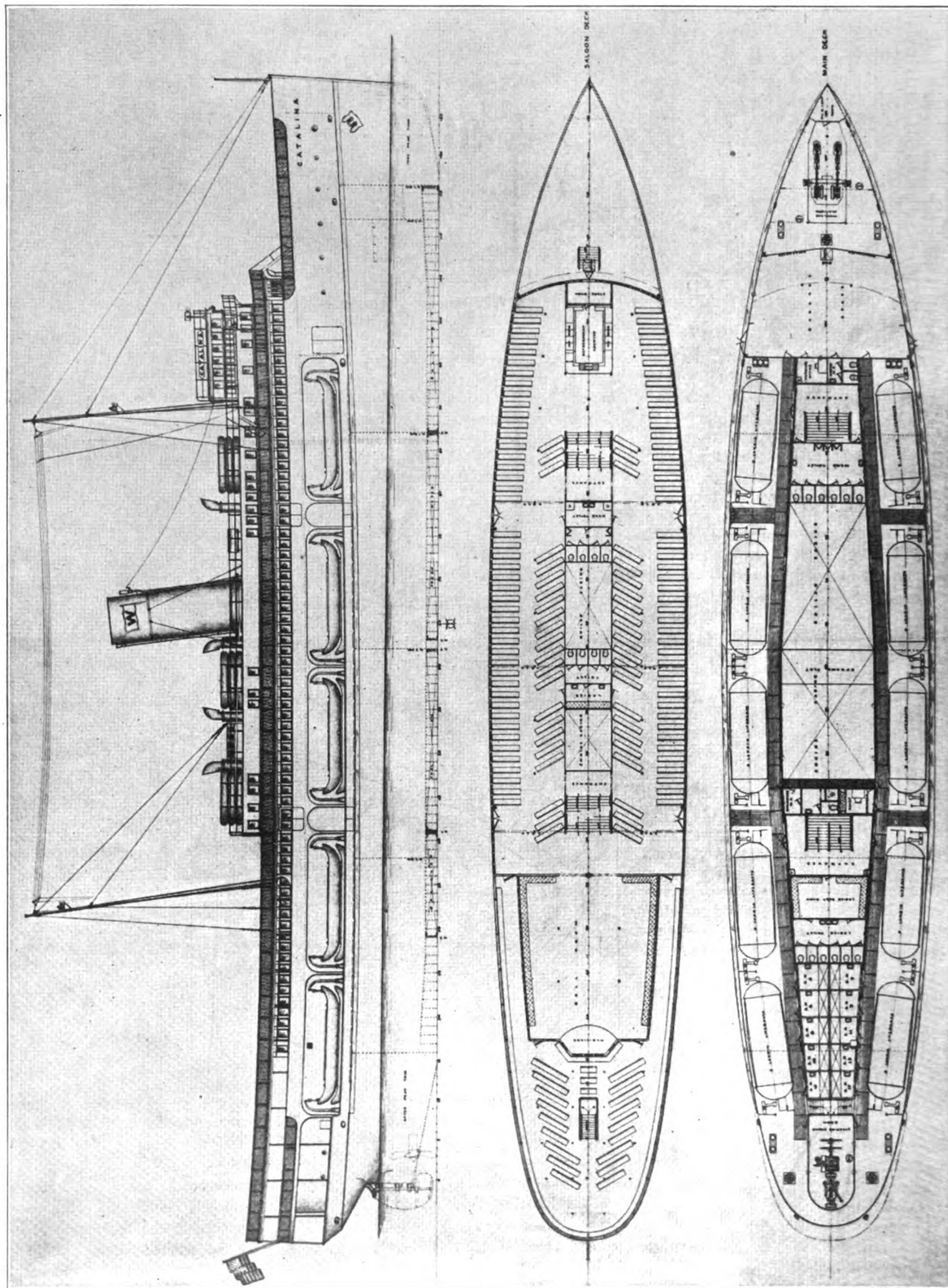
CABLE NET IN POSITION ATTACHED TO SNAG BOAT AND READY FOR BOULDER HUNTING

about one-twentieth the cost per boulder by the diver method.

The cable net was devised by C. C. Worsfold, district engineer, department of public works of Canada, at New Westminster, B. C. The net is patented in Canada and application is being made for United States patents.

engines each developing 4000 brake horsepower at 100 revolutions per minute, the most powerful single acting marine engines ever ordered; three auxiliary engines of 520 brake horsepower each and one auxiliary engine of 110 brake horsepower. Manufacture of the engines has been started.

Fast Express Steamer Being Built to Meet Growth in Travel to Catalina Islands



Port Wants \$15,000,000

British Columbia officials have requested the Dominion government to advance \$15,000,000 for harbor development and

improvement. It is planned to use part of this money at Vancouver this year. Of this appropriation, \$4,000,000 will be required to complete the equipment of the Ballantyne pier and for construction

of No. 2 grain elevator at Vancouver. Other projects in mind at the same port include the purchase of additional land, a cold storage plant, fisherman's wharf, lumber pier and a railroad.

Fast New Steamer Will Run to Catalina

TWENTY-FIVE and one-half miles from Los Angeles harbor is Avalon, on the Catalina islands. Famous for their scenic beauty, ocean gardens and glass bottom boats, these islands have become more and more popular. The short sea voyage has always attracted visitors to southern California. This service is maintained by the Wilmington Transportation Co. with the steamers AVALON, CABRILLO and HERMOSO. A large new steamer, the CATALINA, which will make the run in one and one-half hours, now is being built by the Los Angeles Shipbuilding & Drydock Corp., Los Angeles, for the Wilmington company to meet the growing trade. Both the islands and the steamship company are owned by William Wrigley Jr., Chicago.

Two Decks For Passengers

The CATALINA is a steel twin screw passenger steamer designed for daylight excursion service, with the saloon and promenade decks devoted entirely to the passenger accommodations. The greater part of the saloon deck is enclosed in glass and includes a commodious ballroom. Open deck space for passengers is provided at the after as well as the forward end of the saloon deck and the hurricane deck is entirely open.

There are 10 staterooms on the main deck and four staterooms, including the owner's quarters on the promenade deck. Large rest rooms are included on the main saloon and promenade decks for the comfort and convenience of the passengers.

Fuel oil is carried in part of the double bottom, the remainder of the double bottom, as well as the forward and after peak tanks being used as ballast or trimming tanks. The vessel is electrically lighted throughout and is provided with the most modern of sanitary arrangements.

Her dimensions are:

Length over all, 301 feet 7½ inches; length B. P. 285 feet; breadth molded at main deck, 52 feet; breadth molded at 13 feet 6 inches W. L., 44 feet; depth molded, 21 feet; depth of double bottom amidship, 3 feet; depth of hold amidship, 18 feet; main to saloon deck 12 feet 6 inches; saloon to promenade deck 8 feet; promenade to bridge deck, 7 feet 6 inches; draft, mean 13 feet 6 inches; displacement at 13 feet 6 inches draft, tons, 2390. A large baggage space extends for-

ward on the main deck with double hinged cargo ports on both the starboard and port sides. These ports are of sufficient size to permit the carrying of automobiles.

A large deck house on the saloon deck extends from side to side of the vessel. The sides and ends of this deck house are composed entirely of plate glass windows of the drop type, this arrangement making it possible to have the entire deck open if desired, or partially closed to suit the occasion. Two passenger gangways on each side of the saloon deck will be reached from raised platforms on the company's piers. The ballroom, which is located aft on the saloon deck is of similar construction to the remainder of the house on this deck, the sides and after end consisting entirely of drop windows. The promenade deck is entirely open with the exception of the spaces enclosed by the extension of the engine and boiler casings, and of the deck house forward which contains the owner's quarters, radio rooms and staterooms. Slatted oak seats are provided on this deck similar to those on the saloon deck.

Life Saving Equipment

The most unique feature in the design of the CATALINA lies in the location and arrangements of the lifeboats. In order to provide the most suitable seating arrangement on the saloon and promenade decks and also to obtain a location for the lifeboats which would permit of their being handled promptly and efficiently, the lifeboats are stowed on each side of the main deck, inside of a low steel bulkhead.

There are 20 lifeboats, each having a capacity of 76 persons. These lifeboats are nested two high and are stowed under 10 sets of special Welin davits. These davits have been especially designed to suit the construction and arrangement of the vessel. The boat falls are of wire rope and will be handled by hand operated winches located on the main deck. In addition to the lifeboats three nests of life rafts are located on the bridge deck. Life preservers are stowed in boxes located under the seats on both the saloon and promenade decks.

An 8 x 10-inch anchor windlass is provided for handling the anchors. This windlass is of heavy construction and is fitted with warping heads for handling head lines. There are two 8-inch by 8-inch steam capstans aft on the main deck

and one similar capstan forward on the main deck.

The steering engine is of the right and left hand screw type and is located in a separate compartment aft on the main deck where it is directly connected to the rudder stock. The steering engine is controlled through a messenger shaft from the pilot house.

Main Engines

The main power plant consists of two sets of 3-cylinder, triple expansion engines, having cylinders 20½, 35 and 60 inches in diameter with a common stroke of 36 inches. These engines are designed to develop 3600 indicated horsepower at 100 revolutions per minute. Both engines turn outward driving right and left hand propellers. These engines have double crosshead guides and are fitted with piston valves throughout. Steam turning and reversing gear is also provided.

The four watertube boilers are of Babcock & Wilcox manufacture having a total heating surface of 13,628 square feet. The boiler room is arranged with a fore and aft fireroom. These boilers operate under a working pressure of 225 pounds and are fitted with Babcock & Wilcox oil burning fronts and burners. An independent motor driven forced draft blower is located back of each boiler, arranged to draw air from the fireroom and to deliver it through the boiler seating into the front end of the firebox.

Two independent condensers are each of 2400 square feet cooling surface. Each condenser is provided with an independent centrifugal circulating pump having 12-inch suction and discharge and direct-connected to an 8 x 8-inch steam engine. Each condenser also has one independent vertical simplex, double acting air pump 10 x 20 x 16 inches. There also are two independent feed pumps, one sanitary pump, one engine room bilge pump and one fresh water pump of the vertical simplex type. The ballast pump, fire and bidge pumps and oil transfer pump are of the vertical duplex type.

The electrical installation consists of two 35-kilowatt generator sets located at the level of the main deck at the after end of the engine casing. These generators provide power for lighting the ship throughout and also for operating the forced draft blowers, machine shop equipment, searchlight and radio.

Editorial

Lag Behind in Motor Passenger Liners

IN GREAT BRITAIN during 1923 contracts were signed and work commenced on the following large oil engined passenger liners: One of 17,000 gross tons and 13,500 brake horsepower for the Swedish American line; two of 22,000 gross tons for the Royal Mail Steam Packet Co.; and one of more than 20,000 gross tons and 20,000 indicated horsepower for the Union Castle Mail Steamship Co. The first of these motor liners will be ready early in 1925. The three last are now in the early stages of construction and probably will be completed late in 1925 or early in 1926. In the United States during 1923, the largest oil engined ships ordered were the two Great Lakes freighters for the Ford Motor Co., each of 8500 gross tons and 3000 horsepower.

The bare facts above are surely significant in appraising the immediate future prospects of the American merchant marine. It is evident that no forced, hot house process alone can insure permanence to a nation's shipping. Individual effort properly backed by national aid is essential. For many reasons, a dollar spent in the operation of American ships does not go as far as a dollar spent in the operation of foreign ships, for the same service rendered. On this account, American companies engaged in the foreign carrying trade can not show the favorable balances in the conduct of their business which alone can draw capital to their enterprises. Hence it is difficult to enter into new construction along the lines of the most advanced engineering practice with the very object in view of making a dollar go further in operating expense. Consequently, the immediate prospect is the still further increase in the comfortable lead the foreign lines now possess unless it is offset by some entirely unlooked for and very active development of shipping enterprise in this country.

On the assumption (and it is a reasonable one) that the four large oil engined passenger liners now under construction abroad, turn out in fact to be as successful as their sponsors now believe, the owners of these ships will hold a dominating advantage in their respective trades. They are now taking the lead and we are not even following.

Economic factors will force the United States some day to equip herself with a merchant marine. Such facts as the above show how our present indifference is piling up handicaps which later we shall have to hurdle. A little common sense and foresight now would remove the need for double labor in the future.

* * *

United States has its rum running problem and stories are afloat of the huge profits won by the criminals who dodge about for a time bringing in their illegal cargo. On the other side of the world, a parallel is found in the opium trade. Under the complaisant eyes of officials, Vladivostok is reported to be the center of the opium smuggling trade into China. One report says that the opium imported into Vladivostok

in one year would reduce all the inhabitants of the district to a lifetime coma. But of course, it turns around and goes right out again, down to the China coast, is transferred to junks and is either captured and seized or slips into the nearest Chinese port. A successful smuggling voyage with opium is said to smother rum running as a profitable venture but the moral fiber of the men involved is just as contemptible. Either crew deserves the bullet or jail they usually find in time.

* * *

One of the last of the old training ships was scrapped in England a few weeks ago. Now no seagoing sailing vessel is attached to any British naval establishment while the big commercial companies have cadet training steamers. Only a comparatively few years ago, a course in sail was considered as absolutely essential. The few steam trained officers were lightly regarded and the best posts went to the men who had worked up through canvas.

A few training ships can still be found in this country and in England but influenced largely by the action of naval authorities in dropping the training in sail, the practice is waning. Germany is an exception and is operating a good sized fleet of sailing vessels, most of which are making money and all of which are training men for positions in steamers. A few seasons under sail not only made trained seamen but developed resourcefulness for emergencies.

Each year the increased reliability of marine machinery lessens the chances of emergencies arising while the trend is toward fixed routes and schedules and away from tramping. Unromantic business apparently is not content with driving the white canvased fleet from the seas but intends to blot out even the knowledge of sailing as built up through thousands of years.

* * *

Lord Inchcape, chairman of the Peninsular & Oriental Steam Navigation Co., grouped some interesting data in his annual report. Steamers of the company, during the past year, traveled more than 16 million miles, made 29,000 entries into ports, carried nearly 14 million tons of cargo, 1,800,000 passengers and 215,000 animals. On board its ships, the average number of men employed was 40,000.

Yet this strongly entrenched company reported that with few exceptions the earnings on every voyage during the year fell short of the expenses. Investments in other lines permitted the payment of a 12 per cent dividend, the same rate paid in 1922.

* * *

Aroused by the loss of a ship to British privateers in 1812, a New England firm fitted out its own privateer and captured a British brig which was renamed REMITTANCE as evidence of part payment. Later another ship with a valuable cargo was captured and renamed BALANCE for the profit she gave above the original loss. Ex-President Dutton of the Fireman's Fund Insurance Co., San Francisco, recently recalled this bit of history.

Editorial

Business Sense and Not Politics Shown in Last Move of Shipping Board

CARGOES are more important to ships than subsidies. If the subsidy is ample for one ship, another ship is certain to find it inadequate. The net result to a country's shipping is never found to be 100 per cent of the Nation's funds given away. But give any ship a cargo and do it year after year, and she will make a profit, will build up an organization and will develop a trade and a reputation for service which is independent of unstable political favors.

For that reason, the action of the shipping board in certifying to the interstate commerce commission that ample American tonnage is now available to handle nearly all kinds of trade to the principal trading centers of the world, is better news than tons of political plans. It means that the America shipper who has never bothered himself about what happened to his goods after they got to a seaport, can now save money by routing the goods to destination by an American vessel. The Germans have employed the method to splendid advantage to their own shipping. The British have not because the rail hauls are short but principally because the British are sufficiently keen in commerce to see the advantage of building up their own ship routes.

Section 28 of the merchant marine act of 1920 reads as follows:

"That no common carrier shall charge, collect, or receive for transportation subject to the interstate commerce act of persons or property, under any joint rate, fare, or charge, which is based in whole or in part on the fact that the persons or property affected thereby is to be transported to, or has been transported from, any port in a possession or dependency of the United States, or in a foreign country, by a carrier by water in foreign commerce, any lower rate, fare, or charge than that charged, collected, or received by it for the transportation of persons, or of a like kind of property, for the same distance, in the same direction, and over the same route, in connection with commerce wholly within the United States, unless the vessel so transporting such persons or property is, or unless it was at the time of such transportation by water, documented under the laws of the United States. Whenever the board is of the opinion, however, that adequate shipping facilities to or from any port in a possession or dependency of the United States or a foreign country are not afforded by vessels so documented, it shall certify this fact to the interstate commerce commission, and the commission may, by order, suspend the operation of the provisions of this section with respect to the rates, fares, and charges for the transportation by rail of persons and property transported from, or to be transported, to such ports, for such length of time and under such terms and conditions as it may prescribe in such order, or in any order supplemental thereto. Such suspension of operation of the

provisions of this section may be terminated by order of the commission whenever the board is of the opinion that adequate shipping facilities by such vessels to such ports are afforded and shall so certify to the commission."

Now, the United States shipping board has certified to the interstate commerce commission that sufficient tonnage exists to warrant placing in effect this section of the merchant marine act, with the exception that it does not apply to grain in certain routes. The exact resolution adopted by the board in this connection is as follows:

"Whereas, adequate shipping facilities to handle the transportation of all commerce other than grain between ports of the United States and ports of Great Britain and northern Ireland and the Irish Free State, the ports of continental Europe north of and including Bordeaux and the east coast of Asia, the islands of the Pacific ocean, Australia and the East India islands and the ports of Central and South America are now afforded by vessels documented under the laws of the United States:

"Be it resolved, that the United States shipping board certify to the interstate commerce commission that the operations of the provisions of section 28 of the merchant marine act of 1920 should not be further suspended by said interstate commerce commission so far as relates to all commodities except grain transported between ports of the United States and Great Britain and northern Ireland and the Irish Free State; the ports of continental Europe north of and including Bordeaux and the east coast of Asia, the islands on the Pacific ocean, Australia and the East India islands and the ports of Central and South America; and

"Be it further resolved, that the order of the interstate commerce commission made on the eleventh day of December, 1920, should be continued in force except as modified pursuant to this certification."

According to an address made March 5 in New York by E. C. Plummer, vice chairman of the board, now that the shipping board has withdrawn its suspending order, the law automatically goes into effect. It will be interesting to watch in view of this just exactly when the actual practical benefits accruing to the American merchant marine will begin to be really felt. In other words, is it really going through or is there to be a great deal of haggling back and forth with the effect of stopping the immediate application of these rates preferential to American ships. In this case, it will be necessary to actually know of the operation of this law, before indulging any real feeling of gratification at this forward looking step for the help of the American merchant marine.

When will the interstate commerce commission issue its order? The law does not automatically go into effect, it waits upon an order from the commission and the word used in section 28 is "may" not "must."

Oil Carrying Rates Are Near High Level

Charter rates out of San Francisco for tank steamers are advancing continually owing to the limited number of boats available and higher levels sought by owners of the oil carriers. A shipment of crude oil this month from Tampico to points north of Hatteras, was quoted at a 38-cent rate, an advance of 1 cent a barrel over previous quotations, while one American tanker secured 35 cents a barrel for February shipment from a United States gulf port to a point north of the Hatteras, which equals the top rate lately established. Transatlantic charter rates for oil continue strong with fair demand for tonnage, while the California-Atlantic market is firm.

Demand for additional tonnage on the Pacific coast, particularly for grain and lumber carriers, has picked up considerably during the past month for cargoes to the Far East, United Kingdom and Continent, while transatlantic chartering in grain is comparatively low.

The general slump in the intercoastal steamship business that has been felt during the last three months is beginning to let up and an increased movement of general freight both east and westbound is being felt. Withdrawal of a number of freighters from the trade has made it easier for those remaining to withstand the trade calm of recent months. All indications point to the end of the usual off season slump in the Pacific-Atlantic trade with a promise of even a heavier tonnage movement this year than in 1923.

Pacific Market Waits on Japanese Financing

In the north Pacific, the charter market has shown little life during the past month. While some business has been closed, many berths are overtonnaged, creating a situation unfavorable to owners.

The feature of the market has been the demand for vessels to carry lumber from that coast to the north Atlantic. Foreign ships have been unable to participate in this movement to any great extent for they are available only for loading on the British Columbia side owing to coasting restrictions. The berth lines on the intercoastal route are booked to capacity with lumber for 60 to 90 days in advance. The rate since a month ago has risen from \$12 and \$12.50 to \$14 and \$14.50, two steamers having been fixed at the latter figure for full cargoes.

On the Oriental berth, business is quiet although the successful flotation of the Japanese loan has given a

better tone to the market. However, the Orient is buying in limited quantity and freights are weak and depressed. Considerable "distress" space has developed and it is known that some spot lumber has been booked under \$10 whereas at the peak of the Japanese flurry in December lumber rates were up to \$16. Japanese buyers are having difficulty in financing their purchases and are begging shippers to postpone shipment. This has caused considerable confusion and many operators have had difficulty in filling their steamers, as exporters in some instances have been compelled to cancel space contracts.

Grain rates to Japan and China have dropped in sympathy with general conditions and steamers are offering for flour and wheat to Japan at \$6.25 while for China \$6.50 is being asked. This is a drop of 50 cents since January.

Australia is postponing necessary purchases of lumber in the expectation that freights will be lower. The lumber rate to the Antipodes is \$14.50 and \$15.

European grain continues to absorb

considerable tramp tonnage. The berth lines have booked a large quantity of grain and flour and outside steamers have been fixed at from 37s 6d to 40 shillings.

Unless conditions in Japan improve rapidly, the general belief is that much of the tonnage chartered for the transpacific berth will be compelled to seek business in other directions. Many of these steamers have been taken on long time charters and operators are somewhat apprehensive as to the immediate future.

Coasting business is depressed and not a few steamers have been temporarily withdrawn. Sail tonnage is idle in every north Pacific port.

The Canadian Government Merchant Marine is asking bids on a 340-foot passenger liner for the coast service between Vancouver, B. C., and Alaska. She may be fitted with a diesel engine. Her cost will be about \$1,000,000. The Canadian Pacific railroad also expects to have two new liners in this trade.

Problems of the Ship's Officers

To the Editor, MARINE REVIEW:

AT THE present time, we hear much about the high cost of operating American ships, how important to save here and there, and claiming it is up to the marine officer to accomplish this desired end.

As a general rule he does all he can, is fully alive to this important item and is only too anxious to co-operate with the owner as in plain language it means his very bread and butter.

The owner claims a handicap, and no doubt he has, when compared with certain European standards. But being in the possession of ample shipping facilities puts America in the place of a dictator instead of being dictated to by the threat of a cheaper rate. The ship's officer is laboring under the handicap of an unskilled and ever changing crew. He has continuously to teach a green crew and seldom realizes a fair return on his investment as the men generally do not stay long enough on a ship to master the profession thoroughly and be of any material help and assistance. Men nowadays do not seem to realize the importance of learning a trade thoroughly or to have the patience to do so. It is a rarity to find a mechanic of any trade among the crew or of even the engineers at the present time. Again, the relation between the ship's personnel and the office force is not always the best, in some cases amounting to open hostility. A senior officer may be held responsible for every little mistake made by some one under his charge. rewarding long years of service and

loyalty with a dismissal after spending the best part of his life in the company's employment. A lot could be done by getting better acquainted, by meeting each other half way.

Loyalty begets loyalty and it is the human factor after all which decides profit and loss in any line of business.

Secondly there is a great field for improvements when designing and installing the various units of a power plant of a ship. Proper care would materially lessen the cost of upkeep and add to the ease of repair at sea by insuring these units being placed in accessible places. Far too often, if some minor repair has to be done to a particular auxiliary or a joint has to be remade you will have to dismantle about half of the engine room to get there, expending material and labor uselessly. It is only a matter of using the allotted space to the best advantage instead of the present day practice of shoving all in one corner and wasting the other.

A good many ships have a fairly complete machine shop to take care of routine work. But it is usually located in such a place that it is almost impossible for a man to work there on account of abnormal heat and poor ventilation. On this basis, it becomes a liability instead of an asset.

A great field exists for improvement in the merchant marine, above all in closer co-operation and good will between owner, builder and operating personnel to their mutual benefit.

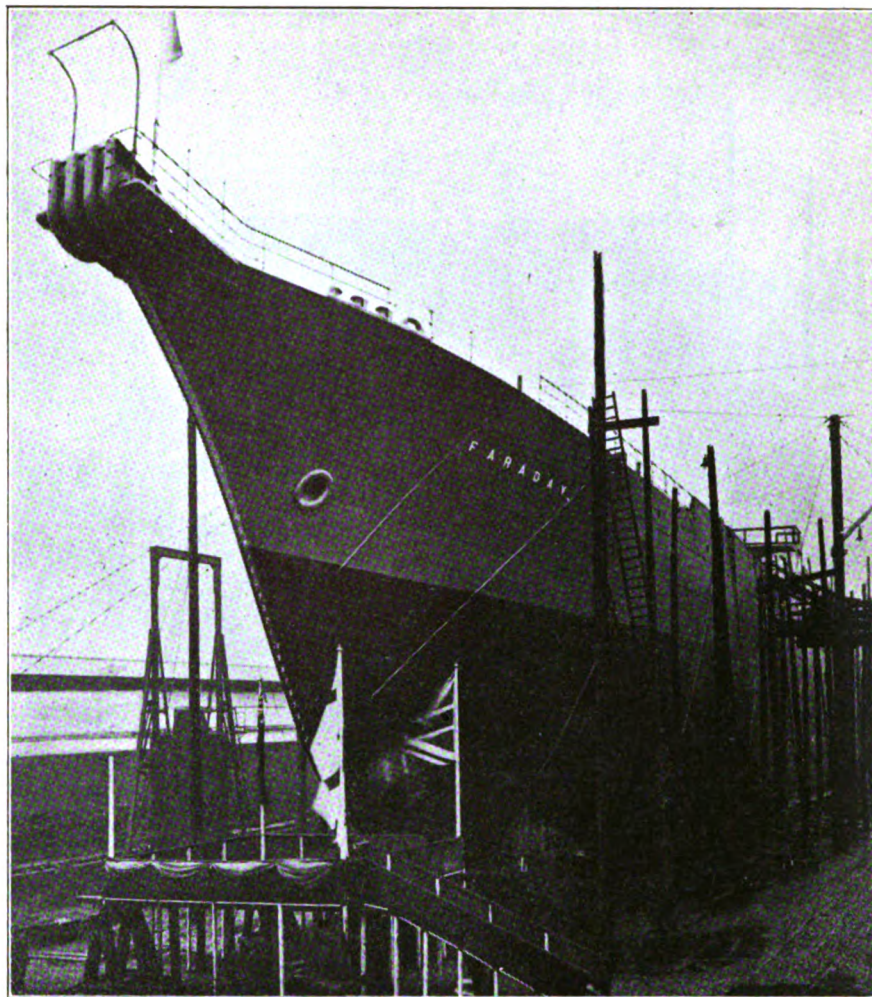
MARINE ENGINEER.

Build Rare but Useful Vessel for Sea Work

CABLE ships are among the most interesting types of vessels afloat. Their construction details are unusual since they perform a specialized class of service for which the usual types of ships are unfitted. The task of laying new arteries of communication between far flung nations is a service to the whole world. Each new cable brings nations closer together, removes the chances of friction and increases the opportunities for profitable commercial interchange.

These ships generally have a long career. For instance, the English cable ship FARADAY takes the place of a ship of the same name which was in active service from 1874 to 1921. The new FARADAY appeared in American waters a few months ago with the new French cable of the Postal Telegraph Commercial Cable Co. Descriptive and historical information, which was obtained from her English builders, has added value because of the complete description of the new American cable steamer DELLWOOD in MARINE REVIEW, January, 1923.

The FARADAY is admirably designed and built for her work. She is one of the largest and most modern of her type afloat. Her length over the bow sheaves is 415 feet, her extreme breadth 48 feet, 3 inches, and her molded depth 29 feet 3 inches. She has four cable tanks, all adjacent to one another and having a total coiling capacity sufficient to contain the whole length of a trans-



CLIPPER STEM OF CABLE SHIP ADAPTED FOR CARRYING THREE SHEAVES

atlantic submarine cable. She is fitted by her builder, the Palmers Shipbuilding & Iron Co., Ltd., Jarrow, England, with twin screw triple expansion engines, steam being supplied by three boilers fitted with Howden's forced draft and burning oil fuel. The total quantity of oil fuel she can carry is sufficient to provide for a steaming radius of 10,000 miles.

History of Famous Ship

The original cable ship FARADAY was launched in 1874 and sailed on her first voyage in connection with laying the direct United States cable in May, 1874. This cable is now the property of the British government. Between June and December, 1879, the FARADAY laid the French Atlantic cable.

In 1881, the American Telegraph & Cable Co., was formed, under the guidance of the late Jay Gould, who sent a cablegram to Messrs. Siemens Bros. & Co., Ltd., London, owners of the new cable ship, asking their price for two Atlantic cables. The estimated price, exceeding a million sterling, was communicated by cable and within a few days a reply was received "make and lay two cables. Fifty thousand

pounds at your bankers." These two cables were laid by the FARADAY in 1881 and 1882. It was during the laying of these cables that a comparatively shallow spot was discovered in about 29 degrees west longitude where the depth of water changed very rapidly, varying in one case from 625 fathoms to 1216 fathoms in a distance of about 1¼ miles. Previous to the soundings taken by the FARADAY, it was assumed that the depth was over 1400 fathoms. This shallow region is now known as Faraday Hills.

In 1883 a contract was made with the Mackay-Bennet Co. (now the Commercial Cable Co.) for the manufacture and laying of two Atlantic cables between Ireland and Nova Scotia, with connections to Weston-super-Mare, Havre, Boston, and New York. In connection with this contract, over 6000 miles of cable were made and laid by the FARADAY in 12 months.

In 1889 a cable was laid for the Mexican Telegraph Co. between Galveston, Tex. and Coatzacoalcos in Mexico. In this year, two cables were also laid for the Western Union Telegraph Co. between Canso, Nova Scotia, and New York, and a deep sea repair was after-



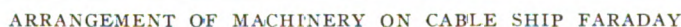
In 1894, a third Atlantic cable was laid for the Commercial Cable Co., and while the FARADAY was in midocean news was received through the cable—while it was being laid—of the birth of the present Prince of Wales. At that time it was considered remarkable that a ship in midocean should be kept

After laying the Commercial company's cable, the FARADAY was for the latter part of 1894, and for several months in 1895, engaged in deep sea repairs to the Western Union and French Atlantic companies' cables.

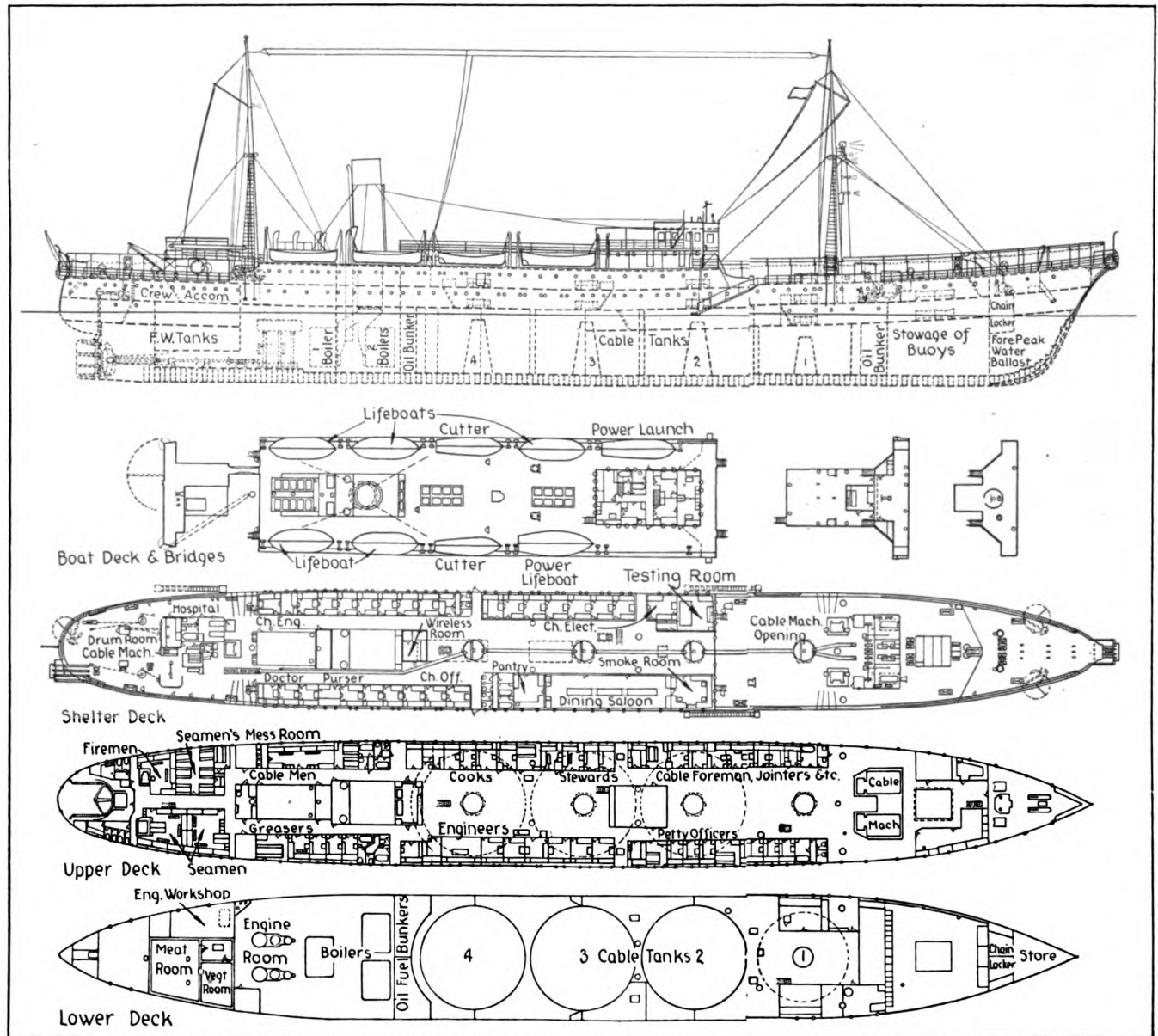
In December, 1895, the FARADAY left London for Para, Brazil, and from there laid a cable up the river Amazon.

Drop Anchor on Hut Roof

This cable was frequently broken by debris brought down when the river was in flood, and even buried by the changing river bed, and in 1897 the upper portion of about 400 miles in length was renewed by a cable laid as far as possible in the tributaries and backwaters of the Amazon. The FARADAY was engaged on this work but did not leave the main river, the bulk of the work being carried out by tugs and lighters which were loaded with cable, as required, from the FARADAY's tanks. During the second expedition, the FARADAY found newly formed islands, where on her previous trip deep water existed.



- | | | | |
|---------------------------------|---------------------------|-------------------------|---------------------------|
| 1. Fresh water pump. | 6. Feed pump. | 11. Ballast pump. | 16. 36-inch ventilator. |
| 2. Sanitary pump. | 7. Circulating pump. | 12. Oil transfer pump. | 17. Auxiliary condenser. |
| 3. Turning engine, 2076 sq. ft. | 8. Feed pump. | 13. Switchboard. | 18. Feed heater. |
| 4. Bilge pump. | 9. Evaporator. | 14. Lifting beam. | 19. Reversing gear. |
| 5. Air pump. | 10. General service pump. | 15. 18-inch ventilator. | 20. 78-inch diameter fan. |



PROFILE AND DECK PLANS OF CABLE SHIP DESIGNED FOR DEEP SEA WORK

In 1899 the islands of Grenada, St. Lucia and Santa Cruz were connected by a cable for the West India & Panama Telegraph Co.

In 1900 a cable was laid from Canso, Nova Scotia, to the island of Fayal in the Azores, and in 1901 another cable from Ireland to Fayal, both cables being for the Commercial Cable Co.

In 1903 and 1904 several repairs were carried out in the Atlantic.

In 1905, a further cable was laid from Galveston to Coatzacoalcas and in November, 1905, the FARADAY left with a load of about 1800 nautical miles of cable which she laid for the Central & South American Telegraph Co. between Valparaiso, Iquique, Chile and Callao, Peru. On completion of the laying operations, the FARADAY was chartered as a repair ship and remained on the west coast of South America for about six months. On her return in August, 1906, she called at Valparaiso for coal

and the great earthquake occurred on the evening of her arrival. Although badly shaken, the ship was uninjured and she eventually proceeded to another port for coal, drydocking, etc.

In 1908 a cable was laid in the Black sea from Varna (Bulgaria) to Sebastopol.

The FARADAY received a thorough overhaul and partial reconstruction in 1909.

Lays First Phone Cable

In 1910, the FARADAY laid the first Pupin coil-loaded telephone cable across the English channel for the British post office. This cable was of a special, and at that time novel, construction, and modifications of the paying out machinery were made which proved to be eminently successful. This cable has had far-reaching effects on long distance telephony.

In May, 1910, the FARADAY left Lon-

don, successfully completed deep sea repairs to two Atlantic cables and returned to London in August, 1910, without having had to call at any port to replenish stores.

In October and November, 1910, a cable was laid from Newbiggin (Northumberland) to Arendal (Norway).

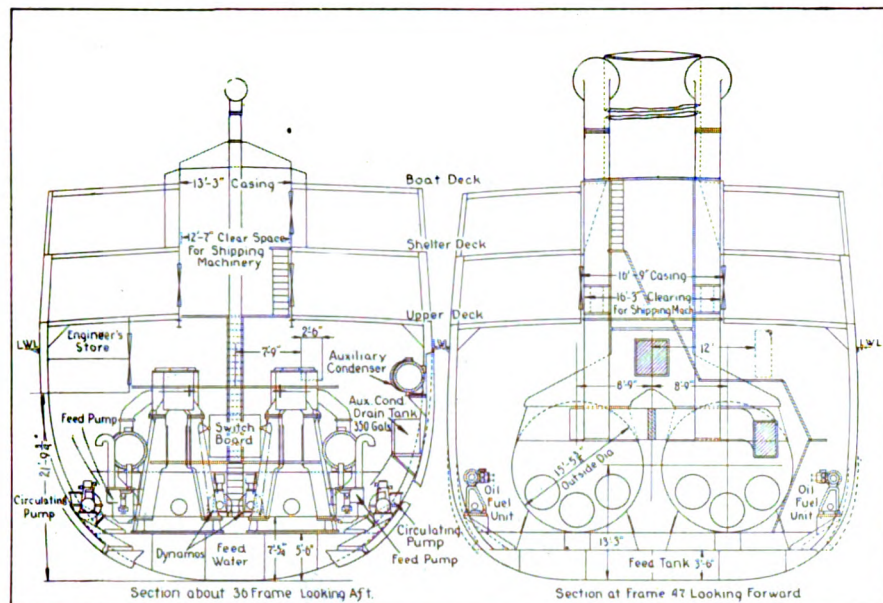
In 1911 the Anglo-Belgian Pupin coil-loaded telephone cable was laid.

In 1912 the repair to the direct United States cable in deep water was undertaken.

In 1913 the FARADAY was engaged in laying cables in the Dutch East Indies in the neighborhood of Sumatra, Java and the Celebes.

During the late war. in the summer of 1915, the FARADAY was engaged for several months in deep sea repairs and diverted one cable into Newfoundland which involved the laying of 500 miles of cable.

In 1916, the ship carried a length of



SECTIONS THROUGH NEW CABLE SHIP SHOWING MACHINERY ARRANGEMENT

800 miles of cable to Japan where it was transferred and laid by a Japanese vessel.

In 1917, the FARADAY was engaged in laying a cable for the British and Russian authorities connecting the Russian winter port of Murmansk with Archangel which, in connection with a cable laid by another company, gave direct communication from Archangel to England.

In 1918, during the height of the enemy submarine activities the FARADAY carried out the partial renewal of one of the Atlantic cables which involved the laying of about 800 miles of cable, and was afterward engaged in repair work—being absent from England for 6½ months during which time all operations had to be carried out without showing any lights. The credit due this difficult work during the war, facing death daily from submarines, is given by Lord French, who at one time reported that the shortage of cables was more serious than the shortage of shells.

End of a Long Career

In 1919, further deep water repair work was undertaken in the Atlantic.

In 1920, a cable was laid from Colon, Panama and Cartagena, Colombia. After passing through the Panama canal, another cable was laid from Santa Elena, Ecuador to Callao, and later in the year another Pupin coil-loaded telephone cable was laid from the island of Gotland to the main land near Stockholm.

In 1921, the ship was absent from England, on her last voyage, for about four months, engaged in laying a cable from Porto Rico to Cuba and then undertook further work in the Gulf of Mexico and off the Cuban coast.

This FARADAY was one of the earliest

twin screw vessels, said to be the first European vessel equipped with electric light, and she carried one of the first of Lord Kelvin's compasses. Her two funnels abreast gave her a distinctive appearance.

Description of the New Faraday

The cable laying and repairing steamer FARADAY is one of the largest and most modern vessels of her type afloat, and has been designed to carry about 4500 tons of cable. She has a steaming radius of 10,000 miles and is fully equipped with the latest appliances for laying and repairing cables. The hull is steel under special survey to class 100 A.1. with Lloyd's Register of Shipping. She is of the shelter deck type with freeboard.

The leading particulars are as follows:

Length over bow and stern sheaves	ft., in.	415 0
Length between perpendiculars,	ft., in.	380 0
Breadth extreme, ft., in.		48 3
Depth molded, ft., in.		29 3
Draft designed, ft., in.		27 3
Gross tonnage	.....	5370
Net tonnage	.....	2640
Water ballast capacity, tons	.....	2200
Fuel oil capacity, tons	.....	1500
Speed, knots	.....	12

The general arrangement of the ship is shown in the accompanying drawings. She has a clipper stem adapted for carrying three cable sheaves, a cruiser stern with two sheaves fitted on the starboard side, two masts with schooner rig, double bottom all fore and aft with oil tight middle line division adapted for carrying either water ballast or oil fuel. Oil fuel is also carried in the cross bunker at fore and aft end of the cable tanks and separated from these by spaces, which can be

used for additional water ballast, to insure ample immersion of the vessel when her cable is discharged.

Four cable tanks are arranged *en bloc*, each having a watertight steel cone, the internal surfaces of these tanks being all finished flush to prevent damage to the cable.

A large hold forward is fitted up for stowing buoys and other gear incidental to cable work.

The ship has two complete decks designated shelter and upper respectively; above the shelter deck is a long boat deck, and there is also a lower deck beneath the upper deck outside the limits of the machinery space.

On the boat deck at the forward end is a large steel house containing a suite of rooms each for the captain, cable engineer, and cable representative, and also a drawing office; above this house is the navigating bridge with chart room and special rooms for the captain and the navigating officer, contained within the teak and glazed encasement. The total number of ship's officers, cable staff and crew will exceed 150. There are five lifeboats, two working boats and two power lifeboats with patent mechanical davits to each.

The shelter deck is the working platform for cable repairing, testing, jointing, etc. At the bow are three cable sheaves. Immediately forward of the main cable machinery hatch is a dynamometer for registering the pull of the cable, and abaft this hatch is a steel house and shelter for the control gear to the picking up machinery.

Situated on the after end of this deck is the paying out machinery with its attendant dynamometer, jockey gear, stern sheaves and handling gear. Under the boat deck abreast the cable hatches is the accommodation for the cable staff, electricians, officers and other leading members of the crew, also a large dining saloon, smoke room, testing room, radio room, etc.

Equipment Is Complete

The upper deck in the forward watertight compartment contains a steam windlass and engines for the capstans on the deck above, and further aft is situated the main cable machinery, which is of Messrs. Siemens Bros. & Co.'s latest design and constructed by the Palmers Shipbuilding & Iron Co., Ltd. Abreast of this machinery are the store, paint, and lamp rooms. The stern compartment of this deck is fitted up for the steam steering gear of the Wilson-Pirie type, controlled from the navigating bridge by telemotor. With the exception of the working spaces over the cable tanks, the remainder of this deck is fitted up with rooms for engineers, cablemen, petty officers, stew-

ards, seamen, and firemen, also with culinary and various storerooms.

The lower deck over No. 1 cable tank is subdivided into workshops for blacksmiths, joiners, electricians, and carpenters. The boatswain's stores are also arranged on the deck between Nos. 2 and 3 cable tanks. Aft of the main machinery room on the starboard side are cold chambers of sufficient capacity to store provisions for long periods at sea, while on the port side of this space is fitted a carbon dioxide type refrigerating machine and an engineers' workshop.

The engines are of the twin screw triple expansion, surface condensing type, arranged to work on three cranks placed at equal angles. The engines will develop 2960 indicated horsepower at sea when running at about 88 revolutions per minute. The cylinders are 21, 34 and 57 inches in diameter and the stroke is 39 inches. The cylinders are supported on cast iron columns of box section. The main condensers which are cylindrical and constructed of steel plates, are supported on the main engine columns. The circulation is maintained by separate centrifugal pumps. The usual separate pumps are provided for feed, ballast, bilge and sanitary services and heater and filter for feed water.

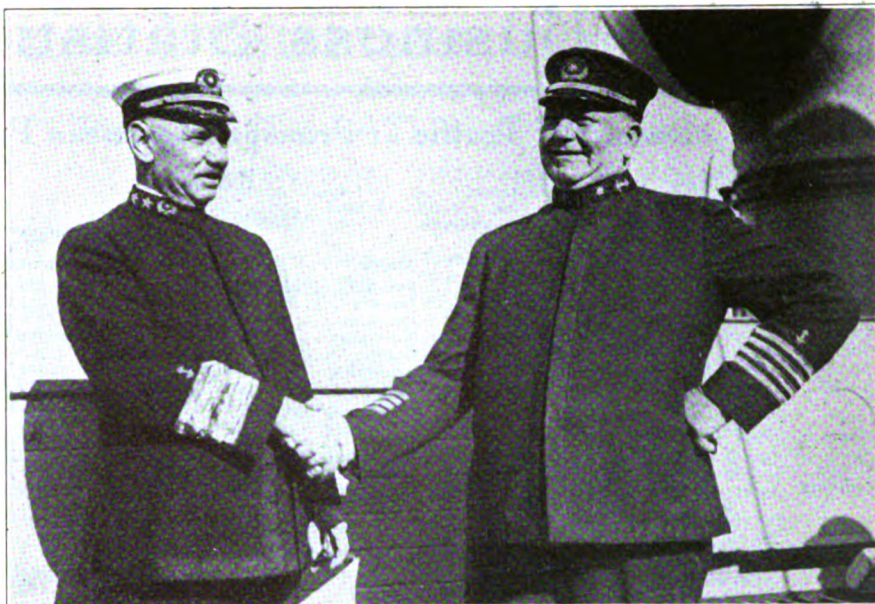
Steam is supplied at a pressure of 180 pounds per square inch by three single ended boilers 15 feet 3 inches in diameter and 11 feet 3 inches long, each having three furnaces and fitted with Howden's system of forced draft. The furnace fronts are arranged for burning oil exclusively.

The engines are arranged so as to be capable of working at very low revolutions in order to drive the vessel, when necessary, at the low speed of about three-quarters of a knot.

Paul F. Hermann, who has been one of the managers of *Stahl und Eisen*, a well known German technical publication, has established offices at 501 Century building, Pittsburgh. He plans to deal in foreign language technical books, through his connection with various German publishers and scientific societies.

J. H. P. HOWARD JR., formerly connected with Williams, Dimond & Co., in charge of operations of the Mexican States Line, has been appointed assistant port superintendent of the United American Lines at San Francisco.

H. H. EBEL, San Francisco, formerly connected with the operating department of Williams, Dimond & Co., and well known along the entire Pacific coast, has joined the salvage firm of Merritt, Chapman & Scott.



SIXTY-SEVEN YEARS OF SERVICE FOR ONE AMERICAN COMPANY
Capt. Peter Johnson (left), master of the Matson Navigation Co. flagship MAUI, and Capt. John O. Youngren, master of the Matson liner ENTERPRISE, have been in Matson service for 67 years. Captain Johnson, who is commodore of the fleet, has started his thirty-sixth year and Captain Youngren his thirty-third. Neither captain has ever lost his ship or had a bad accident. Each has covered more than 1,500,000 miles between San Francisco and the Hawaiian Islands.

Flexible Coupling for Marine Auxiliaries

A new principle in the design of flexible couplings is presented in the recent introduction of the Falk Corp., Milwaukee. This coupling transmits power between two flanges by means of specially constructed grid springs of tempered steel. It is claimed that true flexibility is obtained from the elastic properties of these springs and that the coupling is capable

of withstanding an unusual degree of parallel and angular misalignment of the shafts. A view of the coupling is shown in the accompanying illustration.

The special feature of this device, however, is its torsional resiliency and consequent shock absorbing qualities obtained from the action of the spring which engages with specially constructed grooves around the periphery of the flanges. Under light load each bar or element of the spring is flexed between points which are separated by the maximum distance. The flexibility of the spring under these conditions is proportioned accordingly. As the load increases the springs wrap around the walls of the inward flaring grooves, which are especially curved for this purpose, so that the increasing load shortens the effective span of each spring bar, causing it to offer greater resistance to flexion without increase of stress.

The working parts of this coupling are enclosed in a floating shell which is packed with lubricant. The shafts can be aligned easily and disconnected quickly by releasing the shell and removing the springs around the flanges.



FLEXIBLE COUPLING SHOWN DIS-
ASSEMBLED

ALBERT F. ZIPF, who since 1904 has been connected with various maritime companies in the Pacific Northwest, among which were the Northern Navigation Co., the White Pass & Yukon railroad and the British Yukon Navigation Co. has been appointed Pacific coast manager of the Williams Steamship Co., succeeding John W. Chapman, who recently resigned. He will be located at San Francisco.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	378	1,467,340	445	1,738,675
January	370	1,513,056	434	1,749,172
December, 1923.	383	1,507,914	445	1,658,423
November	418	1,768,503	461	1,976,338
October	462	1,868,446	489	1,993,758
September	428	1,818,981	477	1,978,023
August	468	1,855,045	520	2,039,732
July	462	1,799,836	490	1,962,302
June	466	1,799,908	518	2,075,654
May	500	1,849,548	501	1,874,019
April	469	1,818,531	467	1,788,555
March	477	1,764,093	494	1,857,212
February	395	1,437,919	413	1,529,096

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	86	224,309	64	186,373
January	60	151,915	53	155,550
December, 1923.	78	227,055	64	190,644
November	78	198,122	54	135,077
October	93	241,457	64	178,279
September	92	236,293	74	182,700
August	97	251,295	73	180,771
July	109	269,158	77	177,700
June	102	257,507	69	191,633
May	105	267,441	82	207,209
April	87	218,177	83	229,333
March	111	306,580	76	209,261
February	67	160,678	54	139,701

Boston

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	99	307,627	44	133,504
January	84	250,355	47	116,832
December, 1923.	102	285,125	48	130,115
November	91	305,230	60	166,404
October	118	354,296	59	156,940
September	117	307,719	79	185,726
August	126	302,391	86	174,006
July	146	337,033	85	178,706
June	176	319,135	128	176,853
May	159	328,183	108	176,845
April	106	328,372	67	197,510
March	106	330,766	51	139,776
February	102	323,889	48	128,949

Portland, Me.

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	20	67,476	22	69,594
January	22	56,749	23	59,235
December, 1923.	29	104,724	26	100,583
November	25	80,910	24	74,849
October	19	39,456	15	32,471
September	9	22,724	10	25,582
August	11	24,155	8	18,838
July	8	18,148	9	17,770
June	7	22,613	8	25,941
May	8	16,470	11	17,781
April	22	75,012	29	100,274
March	29	94,128	31	83,391
February	33	91,190	36	100,312

Providence

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	10	39,388	8	35,236
January	8	33,215	7	28,927
December, 1923.	12	43,345	7	23,294
November	5	23,038	6	15,700
October	8	30,248	9	24,821
September	9	31,514	12	41,646
August	9	34,323	9	27,664
July	10	25,155	7	29,316
June	7	25,466	5	17,238
May	9	31,731	8	38,870
April	10	33,783	12	41,352
March	8	31,910	8	34,367
February	17	56,353	10	39,840

Baltimore

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	98	310,158	107	335,108
January	85	270,169	99	315,804
December, 1923.	117	365,142	110	354,229
November	90	280,617	91	279,278
October	96	285,871	95	297,566
September	94	292,315	99	297,965
August	100	303,073	92	262,306
July	130	390,465	137	395,206
June	140	407,872	135	406,138
May	156	476,041	160	468,248
April	159	470,698	138	416,969
March	123	375,762	117	354,803
February	80	240,133	94	275,291

Norfolk and Newport News

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1924..	31	96,074	79	249,575
December, 1923.	30	86,444	75	219,325
November	24	65,263	83	239,807
October	18	56,473	65	188,805
September	14	37,823	65	184,646
August	36	113,070	81	244,366
July	41	108,465	108	296,197
June	36	107,218	66	190,218
May	62	188,850	93	286,420
April	21	65,350	73	212,453
March	16	51,333	71	200,858
February	8	24,958	42	130,121
January	14	41,127	44	121,152

Savannah

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February	28	84,961	30	89,599
January	28	88,627	32	96,979
December, 1923.	26	72,541	21	64,973
November	24	75,739	23	67,551
October	31	89,817	33	91,089
September	29	82,569	27	83,689
August	18	55,205	20	59,452
July	18	53,071	22	60,711
June	27	77,392	31	90,636
May	26	67,494	23	63,395
April	26	81,582	27	83,365
March	31	95,905	30	89,323
February	31	87,315	31	87,703

Key West

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	83	83,118	78	84,678
January	69	79,224	70	82,775
December, 1923.	71	88,377	71	91,121
November	80	97,642	85	97,599
October	83	103,328	82	95,506
September	69	77,687	74	84,612
August	80	94,591	82	93,028
July	88	96,514	86	97,260
June	93	105,045	93	102,123
May	97	102,033	95	101,422
April	84	85,964	83	88,475
March	91	88,639	90	83,220
February	69	68,735	64	68,658

Portland, Oreg.

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1923.	30	99,748	34	120,487
November	39	113,362	34	120,487
October	21	78,191	48	174,275
September	23	86,194	41	138,470
August	17	64,218	31	106,478
July	19	66,048	24	86,474
June	22	87,147	25	87,419
May	16	58,889	21	72,663
April	17	62,287	22	84,940
March	16	69,514	22	78,124
February	13	46,219	18	66,446
January	12	47,848	25	97,674
December, 1922.	13	46,245	31	104,065

New Orleans

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	217	604,411	227	610,455
January	217	595,087	220	588,703
December, 1923.	239	632,193	231	634,300
November	216	575,102	218	605,923
October	226	605,211	239	649,791
September	205	548,914	169	444,881
August	235	605,671	249	639,802
July	237	602,017	227	587,966
June	230	584,271	226	572,211
May	221	550,817	237	603,128
April	234	612,572	237	623,539
March	253	648,990	269	682,080
February	204	559,638	206	539,965

Galveston

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1924..	70	210,110	96	317,105
December, 1923.	71	219,767	106	313,231
November	61	172,824	95	301,148
October	83	209,343	108	334,544
September	64	164,854	100	290,715
August	69	172,330	92	257,371
July	70	178,601	77	198,200
June	77	178,013	82	209,893
May	78	181,759	97	256,745
April	65	162,317	77	209,388
March	58	170,841	97	287,278
February	48	146,944	76	233,591
January	69	219,967	89	282,889

Port Arthur, Tex.

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
September, 1923.	31	88,978	42	121,898
August	45	122,018	56	156,908
July	36	107,997	49	122,785
June	52	161,207	57	174,651
May	59	187,057	64	206,089
April	58	191,158	56	188,376
March	64	188,176	55	169,005
February	52	172,273	44	142,554
December, 1922.	59	210,778	65	218,274
November	42	143,551	47	154,010
October	68	227,039	66	217,502
September	53	158,181	57	168,681

Mobile

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1924..	81	158,416	83	159,081
December, 1923.	83	165,163	75	156,579
November	74	148,297	78	145,886
October	68	123,532	60	120,606
September	60	126,005	52	105,247
August	64	191,968	67	146,191
July	73	136,242	66	123,405
June	64	136,311	61	132,863
May	74	167,509	74	174,851
April	85	199,871	82	163,074
March	88	203,032	88	206,285
February	83	186,479	72	160,777
January	77	145,151	67	153,001

Houston

(Exclusive of Domestic)

Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1924...	60	55,037	58	267,066
December, 1923.	74	73,876	70	304,359
November	84	83,490	82	350,703
October	75	24,076	70	268,416
September	66	58,704	61	92,664
August	58	43,258	56	211,348
July	48	42,447	48	177,666
June	49	72,875	50	197,081
May	54	60,640	50	182,691
April	47	72,222	55	119,521
March	54	69,428	51	135,906
February	49	50,379	48	167,872
January	49	36,744	52	146,532

Marine Business Statistics Condensed

Port Traffic Record

San Francisco

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	53	185,226	59	211,896
January	65	215,020	68	229,206
December, 1923..	63	209,105	68	234,960
November	69	281,081	70	243,152
October	56	205,175	71	249,035
September	43	165,798	63	209,930
August	64	208,625	65	224,918
July	68	244,530	58	189,348
June	59	204,204	65	227,566
May	64	230,778	69	244,321
April	61	199,831	63	227,467
March	50	168,399	71	237,195
February	47	165,333	60	214,686

Los Angeles

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1924..	107	246,203	124	241,859
December, 1923..	165	285,919	103	261,322
November	243	234,357	188	220,733
October	178	230,116	242	194,872
September	88	257,074	110	193,177
August	80	193,400	63	161,380
July	78	265,294	56	187,987
June	87	212,483	53	175,799
May	78	246,275	53	179,360
April	87	269,264	72	165,302
March	115	251,459	90	185,155
February	86	148,957	83	137,564
January	91	153,564	92	141,332

Seattle

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1924..	48	189,146	54	213,851
January	57	233,002	60	242,577
December, 1923..	48	206,466	52	224,112
November	48	199,115	46	191,022
October	39	184,717	47	200,668
September	32	142,052	40	159,006
August	39	173,885	37	163,188
July	30	148,607	32	149,239
June	36	147,186	39	184,732
May	29	133,752	37	159,393
April	32	141,569	31	133,950
March	28	129,070	30	138,428
February	26	120,548	39	156,258

At its recent quarterly meeting at Vancouver, B. C., the Pacific west-bound conference adopted the following changes in rates: General cargo increased from \$10 to \$12; machinery from \$8.25 to \$10; agricultural implements \$9 to \$10; sulphate of ammonia \$7 to \$9; automobiles \$8 to \$10; cigars \$11 to \$12; iron and steel \$5 to \$6.50. The rates apply to cargo originating east of the Missouri river. The new tariffs are adjusted so as to establish a parity between lines operating from Atlantic ports direct by water and lines between north Pacific and the Orient.

With the inauguration of round-the-world service by the Dollar Steamship line, it is announced that passengers require six yards of ticket to enable them to encircle the globe. The complete ticket forms a booklet of 25 pages, containing a coupon good between each port of call with a final return limit of two years.

Record of Traffic Through Panama Canal

		Atlantic to Pacific traffic— Panama Canal			Pacific to Atlantic traffic— Panama Canal			Total traffic through canal— Panama Canal		
		No. of ships	Net tonnage	Tons of cargo	No. of ships	Net tonnage	Tons of cargo	No. of ships	Net tonnage	Tons of cargo
1924										
January	American	132	718,017	335,654	120	645,770	1,066,254	252	1,363,787	1,401,908
	Foreign	121	555,220	346,658	103	481,033	678,766	224	1,036,253	1,025,424
	Totals	253	1,273,237	682,312	223	1,126,803	1,745,020	476	2,400,040	2,427,332
1923										
December	American	143	760,701	316,251	127	708,126	1,115,399	270	1,468,827	1,431,650
	Foreign	135	607,041	418,027	101	440,623	644,957	236	1,047,664	1,062,984
	Totals	278	1,367,742	734,278	228	1,148,749	1,760,356	506	2,516,491	2,494,634
November	American	116	627,115	323,129	128	680,833	1,108,292	244	1,307,948	1,431,421
	Foreign	115	537,180	309,785	77	348,737	477,089	192	885,917	786,874
	Totals	231	1,164,295	632,914	205	1,029,570	1,585,381	436	2,193,865	2,218,295
October	American	132	727,005	286,947	129	687,521	1,141,192	261	1,414,526	1,428,139
	Foreign	97	451,734	335,800	69	273,215	363,628	166	724,949	699,428
	Totals	229	1,178,739	622,747	198	960,736	1,504,820	427	2,139,475	2,127,567
September	American	111	598,331	251,797	126	686,359	1,132,572	237	1,284,690	1,384,369
	Foreign	87	382,506	259,922	89	377,356	524,412	176	759,862	784,334
	Totals	198	980,837	511,719	215	1,063,715	1,656,984	413	2,044,552	2,168,703
August	American	157	825,056	435,851	127	670,023	1,071,457	284	1,495,079	1,507,308
	Foreign	104	445,708	302,749	66	291,803	358,693	170	737,511	661,442
	Totals	261	1,270,764	738,600	193	961,826	1,430,150	454	2,232,590	2,168,750
July	American	146	743,072	361,335	139	751,940	1,194,357	285	1,495,012	1,555,692
	Foreign	109	464,386	328,697	80	350,629	453,395	189	815,015	782,092
	Totals	255	1,207,458	690,032	219	1,102,569	1,647,752	474	2,310,027	2,337,784
June	American	131	705,481	385,843	115	607,950	1,022,421	246	1,313,431	1,408,264
	Foreign	96	405,816	270,146	75	316,655	418,036	171	722,471	688,182
	Totals	227	1,111,297	655,989	190	924,605	1,440,457	427	2,035,902	2,096,446
May	American	133	715,061	406,699	120	651,504	1,096,175	253	1,366,565	1,502,874
	Foreign	96	424,600	335,652	70	337,249	426,557	166	761,849	762,209
	Totals	229	1,139,661	742,351	190	988,753	1,522,732	419	2,128,414	2,265,083
April	American	123	662,300	331,114	116	637,178	1,041,481	239	1,299,478	1,372,595
	Foreign	81	360,318	322,255	84	347,894	492,295	165	708,212	814,550
	Totals	204	1,022,618	653,369	200	985,072	1,533,776	404	2,007,690	2,187,145
March	American	119	635,992	348,598	96	509,443	819,204	215	1,145,435	1,167,802
	Foreign	114	505,290	329,890	80	337,467	443,236	194	842,757	773,126
	Totals	233	1,141,282	678,488	176	846,910	1,262,440	409	1,988,192	1,940,928
February	American	97	486,186	325,835	82	422,871	633,458	179	908,673	959,293
	Foreign	78	354,190	237,604	69	266,300	366,381	147	620,874	603,985
	Total	175	840,376	563,439	151	689,171	999,839	326	1,529,547	1,563,276
January	American	88	450,254	313,094	67	320,300	462,245	155	770,554	775,339
	Foreign	106	473,524	285,649	91	366,614	530,944	197	840,138	816,593
	Total	194	923,778	598,743	158	686,914	993,189	352	1,610,692	1,591,932
Vessels in Ballast										
1924										
January	American	66	396,712	0	0	0	0	66	396,712	0
	Foreign	45	191,380	0	2	9,269	0	47	200,649	0
	Totals	111	588,092	0	2	9,269	0	113	597,361	0
1923										
December	American	75	438,590	0	0	0	0	75	438,590	0
	Foreign	48	192,416	0	3	9,580	0	51	201,996	0
	Totals	123	631,006	0	3	9,580	0	126	640,586	0
November	American	52	307,299	0	2	8,323	0	54	315,622	0
	Foreign	39	162,303	0	2	9,554	0	41	171,857	0
	Totals	91	469,602	0	4	17,877	0	95	487,479	0
October	American	73	443,618	0	2	3,165	0	75	446,783	0
	Foreign	17	77,706	0	2	4,903	0	19	82,609	0
	Totals	90	521,324	0	4	8,068	0	94	529,392	0
September	American	59	352,792	0	1	5,233	0	60	358,025	0
	Foreign	19	85,041	0	3	12,121	0	22	97,162	0
	Totals	78	437,833	0	4	17,354	0	82	455,187	0
August	American	82	477,284	0	2	6,073	0	84	483,357	0
	Foreign	24	100,910	0	3	9,581	0	27	110,491	0
	Totals	106	578,194	0	5	15,654	0	111	593,848	0
July	American	76	443,654	0	4	12,848	0	80	456,502	0
	Foreign	25	107,103	0	3	9,580	0	28	116,683	0
	Totals	101	550,757	0	7	22,428	0	108	573,185	0
June	American	70	422,173	0	0	0	0	70	422,173	0
	Foreign	27	118,540	0	2	7,255	0	29	125,795	0
	Totals	97	540,713	0	2	7,255	0	99	547,968	0
May	American	72	422,947	0	3	10,658	0	75	433,605	0
	Foreign	23	87,784	0	2	4,750	0	25	92,534	0
	Totals	95	510,731	0	5	15,408	0	100	526,139	0
April	American	67	393,895	0	3	18,837	0	70	412,735	0
	Foreign	11	44,214	0	2	9,412	0	13	53,626	0
	Totals	78	438,109	0	5	28,249	0	83	466,358	0
March	American	60	359,006	0	4	7,841	0	64	366,847	0
	Foreign	35	144,223	0	3	9,915	0	38	154,138	0
	Totals	95	503,229	0	7	17,756	0	102	520,985	0
February	American	36	229,578	0	0	0	0	36	229,578	0
	Foreign	24	105,848	0	3	7,486	0	27	113,334	0
	Total	60	335,426	0	3	7,486	0	63	342,912	0
January	American	29	181,617	0	2	10,141	0	31	191,758	0
	Foreign	26	109,586	0	1	4,942	0	27	114,528	0
	Total	55	291,203	0	3	15,083	0	58	306,286	0

Free Ship Library Proves Value

Good Reading Made Available for Sailors by Library Association—Movement Is Growing

FREE public libraries are so intimately a part of American town life that taxpayers pay regular assessments for their maintenance or expansion without even the shadow of a doubt as to the wisdom of the expenditure. But the big floating population which is constantly at sea has had no such privilege of educating or amusing itself with good books. The war brought a better understanding of this situation and the work started then in the United States to make books available for merchant sailors has been carried on. Its value has brought its introduction just recently into other countries.

By voluntary contributions of money and books, the American Merchant Marine Library association is providing books for American sailors, whether trading out of Atlantic, Pacific, Gulf or Great Lakes ports. The results of less than three years' activities have proved the great value of this work. The sailors find these libraries a treasure house for their idle hours. Men without previous desire to read have grown to like it—first as a means of whiling away the off watch hours. From the first steps in adventurous fiction to the more solid works of literature or of a technical nature, the way is neither long nor arduous.

But the association has no part in advising what the men read or in trying to control the course of the sailor's reading. Libraries are made up in stated divisions of fiction, history or travel, and technical books and placed on board ship. Special requests for particular books are met whenever possible. And these requests run the gamut from the latest "best seller" to the best of philosophy or the most involved of technology.

Work Is Praised

Correct appraisal of the kind of work being done by the association is given by glancing over the list of business and political leaders who are giving moral and active support. President Coolidge is serving as honorary president of the American Merchant Marine Library association because he feels that "the libraries serve not only to furnish instructive and interesting reading but that they also serve to maintain the morale of the men in the service."

Herbert Hoover, secretary of commerce, feels the work should have the "whole-hearted endorsement of everyone

who * * * should support the very practical efforts to give seamen that opportunity for reading and study which is so much more easily available to those of us who remain ashore." Julius H. Barnes, president of the Chamber of Commerce of the United States has shown his active approval.

Satisfactory tests of another kind are hundreds of unsolicited expressions of approval sent in by the men on the ships or by the owners of the vessels. "We couldn't get along without them," "there was never anything like it done for the sailors," a chief said, "it gives us a steadier crew and makes them more contented."

History of Movement

Rear Admiral William S. Sims, U.S.N. retired, the vigorous leader of the American naval forces in European waters during the war, is a sincere and aggressive advocate of the library. He has made a number of addresses outlining the work of the association and supporting his judgment by his practical knowledge of sea life and its needs. He cites as proof of the genuine value of the library work, that European countries have begun to establish these floating libraries for their ships, England and Norway in particular, with Sweden following.

The American Merchant Marine Library association incorporated in May, 1921, to continue and develop the work done during the war by the American Library association. That work had been well done but like many other war activities was lagging for lack of direction and financial support.

Mrs. Henry Howard had been chief of the social service bureau of the shipping board recruiting service during the war. This bureau had branches throughout the country and had enlisted in its work, the original library association. When first the bureau and later the library society were disbanded, the merchant sailors were left without any agency interested in supplying books for shipboard use. Mrs. Howard was asked in December, 1920 to take over this work, the books to be given to any agency she might succeed in organizing. In May, 1921, she had enlisted the support of sufficient shipping men and the new association began work.

Trustees of the association represent steamship owners, marine officers, seamen's organization and various educational and civic bodies. The work is

carried on through membership dues and by contributions. Efforts are constantly made to obtain books for replenishing and keeping alive the traveling libraries.

These libraries contain about 80 books each, of which 50 books are fiction, 20 travel, history, biography and literature and 10 are technical. Special requests for particular books are met whenever possible and two libraries are given to large ships or when a long voyage is planned. The libraries are handled carefully by the ships and are almost universally returned, badly worn but with every volume in the case.

At the close of 1923, the American Merchant Marine Library association made a report of its activities. This showed that 872 ships were served in 1922, increasing to 1046 ships in 1923, with 1219 different ships in all having been served since the work started. The total number of libraries in 1922, 1923 and since the inception were 2345, 3048 and 5393 respectively. The total circulation of books to ships was 91,449 in 1922, increasing to 128,566 in 1923 and making a total of 220,015 since inception.

Proved By Its Works

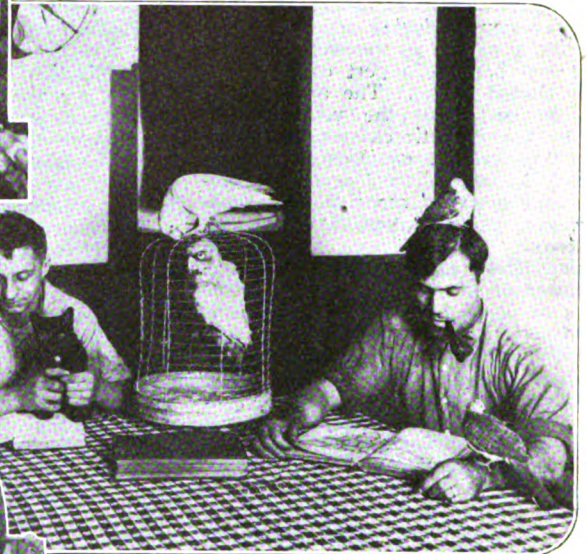
About 60 per cent of the work has been done at coast ports, 40 per cent on the Great Lakes. In all, the circulation of books to ships at coast ports was 49,275 in 1922, growing to 79,464 in 1923, a total to date of 128,739. In the same time, 42,124 books were circulated to lake ships in 1922, in 1923 the total was 49,102, and since inception 91,226. In 1923, the number of individual libraries served to coast ships was 1141 and 656 ships were served. On the lakes, 390 ships were served last year and service was given these vessels 1454 times.

National headquarters are at New York with district branches at the principal Atlantic, Pacific and Great Lakes ports. Mrs. Henry Howard continues in active charge of the work as president, her home being at 11926 Lake Shore boulevard, Cleveland. A list of the officers, of the trustees, of the standing committees and of the contributors to the work of this association, calls the roll of most of the men, organizations or companies closely or even remotely connected with American sea life. Quite apparently, the American Merchant Marine Library association has proved itself by its works.

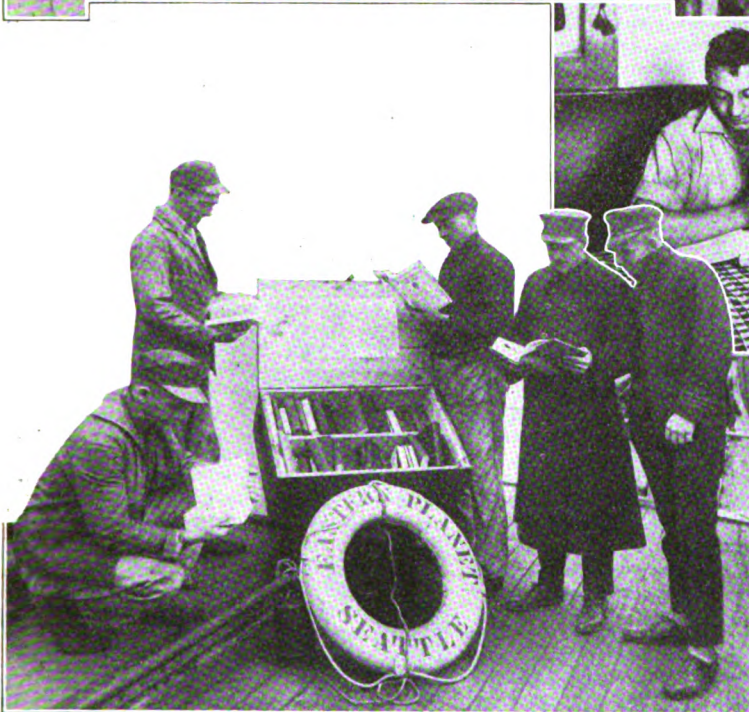


Fore-castle scene on American freighter Eastern Planet. When the camera was ready, each sailor got his own book from his locker and insisted on being shown reading

Petty officers' mess in which the library and menagerie run a close race



New library just brought aboard Eastern Planet, American freighter in Australian service. The sailors suggested the life buoy as indicating the "life saving" value of the library on the long trip to the south Pacific



Cook on the East Wind is a champion reader but of course he does not ordinarily use the galley as a study



Seamen's mess room on Eastern Planet with a cup of coffee served between watches. When the picture was taken, each man produced his book from a hiding place in the mess room

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

IN THE case of FLORENCE OLSON, 283 *Federal Reporter* 11, it appeared that a crew signed shipping articles in New York for a voyage to the western hemisphere and back to a port of discharge in the United States. The articles provided, in part, that the vessel should abide by any Atlantic coast rules agreed to by the "present conference of shipowners," licensed officers, seamen's, firemen's, and stewards' associations regarding wages, transportation, and working conditions." At Baltimore, to prevent the crew from abandoning the voyage, the master of the vessel indorsed on the articles an agreement entitling the crew to transportation back to New York and a specified amount a day subsistence, if discharged on the Pacific coast. The court held that the Baltimore agreement was valid as against objections that it was without consideration and was made under compulsion, and that a ruling made by the conference entitling deck officers to transportation and a certain amount a day subsistence was binding on all concerned.

* * *

The word "hostilities," as used in a war risk insurance policy, is intended to describe an actual operation, offensive or defensive, in the conduct of war; "warlike operations," as so used, refers to operations in time of war. The peril must be due directly to some hostile action, if it be considered a warlike risk. If the peril be a maritime risk, and is but aggravated or increased by the operation relied upon as a warlike operation, then the risk is not a war risk. The nature of the operation of a vessel and not the character of its cargo is the material thing to be considered in determining the question of its warlike operation.—*Queen Insurance Co. of America v. Globe & Rutgers Fire Insurance Co.*, 282 *Federal Reporter* 976.

* * *

Towage does not come within the term "necessaries," as used in act June 23, 1910, giving a maritime lien to one who furnishes "repairs, supplies or other necessities" to a vessel, prior to the amendment thereof by act June 5, 1920; a maritime lien does not exist for towage, independent of the act June 23, 1910.—*MONA*, 282 *Federal Reporter* 468.

* * *

A neutral ship carrying contraband goods, which has been compelled by a warship of a belligerent to put into a port of the belligerent country and informed that she will be detained at such port until her contraband cargo is unloaded, unless she gives a guaranty that if allowed to proceed to her port of destination she will not make delivery of such cargo to the consignees at that

port, but will forthwith return the same to the belligerent government, and which in consequence of such compulsion give such a guaranty, is thereby relieved of the obligation she otherwise would be under to make delivery of such cargo to the consignee at the port of destination, where the goods are carried under a bill of lading which expressly provides that the carrier shall not be liable for loss or damage occasioned "by arrest or restraint of princes, rulers, or people." If a neutral ship carrying contraband cargo is arrested by a warship of a belligerent, and sent into a port of a belligerent, and there informed that she will be detained until her contraband cargo is unloaded or she gives a guaranty that, if allowed to proceed, she will not deliver such cargo to its consignee, but will return it to the government of the belligerent, this amounts to a "seizure" of the contraband articles.—*HELLIG OLAV*, 282 *Federal Reporter* 534.

* * *

A steam vessel, navigating a channel in a fog and hearing the signal of an approaching vessel ahead, is not justified in failing to stop her engines, as required by article 16 of the inland rules, because she is on her proper side of the channel, and on the assumption that the meeting vessel will keep to the other side.—*PROVIDENCE*, 282 *Federal Reporter* 658.

* * *

"Primarily the ship is bound to turn over to an independent contractor, for discharging and taking on cargo, a vessel in safe condition, and to that extent it must in the first instance furnish the longshoremen and workmen a reasonably safe place in which to perform their work, and when that is done, or it has exercised reasonable care and circumspection in that respect, it has discharged its whole duty to both the contractor and the workmen."—*KONGOSAN MARU*, 282 *Federal Reporter* 666.

* * *

The duties and obligations of wharfingers and consignees were in issue in the case of *M. & J. Tracy, Inc., v. Marks, Lissberger & Son, Inc.*, 283 *Federal Reporter* 100, and the court said: "A wharfinger is one who keeps a wharf for the purpose of receiving goods for hire. * * * The duty of a wharfinger is to exercise reasonable care in ascertaining the condition of the berths at his wharf and to remove dangerous obstructions or give due notice of the existence thereof to vessels about to use the berths * * *. This means that a wharfinger is bound to ordinary care and diligence in the transaction of his business, and it is the duty of a libellant to prove negligence. * * * If the

injurious obstruction, though concealed, might have been ascertained by the wharfinger through the exercise of reasonable diligence, liability exists. * * * And even where the obstruction is known and the notice given, so that it can not be understood, liability continues. * * * It has been thought that wharves maintained by municipalities or other public authorities are subject to stricter rules than are private wharfingers, a doctrine for which no authority can, we think, be found in the courts of the United States. The consignee of a vessel is 'bound to provide a safe berth,' * * * which phrase, however, means no more than that such consignee, while not guaranteeing the safety of the wharf, is bound to exercise diligence in ascertaining the condition of the dock and of the berths, and to give notice of any obstruction or of any danger to vessels.' * * * The difference between the obligations of consignees and wharfingers does not rest upon any legal distinction that can be drawn between their respective 'standards of duty.' Both are bound to the exercise of care and diligence under the circumstances; but the means of ascertaining the existence of probable, or even possible, danger are not the same for both. * * * The duty rests upon the wharfinger to watch, maintain, and keep in order that which he asks the public to pay him for the use of. The consignee, and especially the occasional user, who is a consignee, is bound to acquaint himself with the reputation and commonly known characteristics of what the wharfinger offers for hire. But a consignee, who knows that a berth has a good reputation, that it has been used for years without complaint or known accident, is entitled to transact his business on that reputation."

* * *

It was held in the case of *Acme Operating Corp. v. United States*, 283 *Federal Reporter* 449, that where the contract purchaser of a ship from the United States shipping board chartered the same, and the charterer executed a subcharter to a firm which had knowledge of the facts and the title under which the ship was held, and the shipping board retook the vessel for nonpayment of purchase money, a lien on the vessel given the firm by the subcharter for hire advanced and not earned bound only the other party to the contract and its property, and the lien was not effective as against the shipping board. "There is no public policy," said the court, "which requires that a charterer shall have a right to subject a ship which does not belong to him to liability for the payment of hire which he has collected in advance, as there is for the mutual obligations of the ship and cargo."

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DISCUSSING the question of general average, the court in the case of *Aktieselskabet Fido v. Lloyd Brasileiro*, 283 *Federal Reporter* 62, said: "All losses in a maritime adventure falling outside the contractual obligations of the parties, and which arise from a voluntary sacrifice of a part of the cargo, made to save the whole adventure from perishing, or which arise out of extraordinary expenses or expenditures of money incurred for the joint benefit of both ship and cargo, constitute a claim to general average contribution. The doctrine is founded on the principle that what is sacrificed for the benefit of all should be made good by the contribution of all. It is one of the oldest and best established principles of the maritime law. * * * The circumstances, which the testimony discloses in the cases now before the court show: (1) A peril common to all the interests. (2) A peril which was imminent. (3) A voluntary, deliberate, and intentional act of sacrifice or expenditure, made to preserve all interests involved. (4) That the act of sacrifice or expenditure was necessary. (5) That the act was attended with success and the peril avoided. And where such circumstances concur the case is plainly one of general average."

A foreign vessel, lying outside the 3-mile limit, which delivered a part of her cargo of liquors, which were contraband, in the nighttime, to a motorboat, in which it was taken ashore with the assistance of her small boat, and part of her crew, was subject to forfeiture under United States revised statutes, section 2874. The fact that the vessel was seized outside the 3-mile limit, it was held in the case of *GRACE and RUBY*, 283 *Federal Reporter* 475, did not deprive a court of the United States of jurisdiction of the offense under a libel filed after she had been brought into port. Foreign vessels, it was said, hovering always more than three miles from shore for the purpose of smuggling, which have been in contact with the shore by their own boats and crews, and have thereby assisted in smuggling, are subject to seizure. "The high seas are the territory of no nation; no nation can extend its laws over them; they are free to the vessels of all countries. But this has been thought not to mean that a nation is powerless against vessels offending against its laws which remain just outside the 3-mile limit. * * * The line between territorial waters and the high seas is not like the boundary between us and a foreign power. There must be * * * a certain width of debatable waters adjacent to our coasts. How far our authority shall be extended into them

for the seizure of foreign vessels which have broken our laws is a matter for the political departments of the government rather than for the courts to determine. It is a question between governments; reciprocal rights and other matters may be involved."

The owner of a vessel may, under proper circumstances, limit its liability for the consequences of the breach of an implied, although not of an express, warranty of seaworthiness.—*Robert A. Monroe Co. v. Chesapeake Lighterage & Towing Co., Inc.*, 283 *Federal Reporter* 526.

"A bill of lading," said the court in *Aktieselskabet Bruunsgaard v. Standard Oil Co. of New Jersey*, 283 *Federal Reporter* 106, "is both a receipt and a contract. It is a receipt for the goods shipped on board a ship, signed by the person who contracts to carry them or his agent, and stating the terms on which the goods were delivered to and received by the ship. While a shipper has an absolute right to demand a bill of lading, both under the Harter act and by virtue of long-established usage, he must get it from a properly authorized person, and who that person is will depend upon the facts shown in each particular instance." In this case, the charter party did not contain a provision requiring the master to sign bills of lading as demanded, without prejudice to the charter party, and the court held that a loading agent for the charterer had no authority to issue a bill of lading or collect freight, and that the master was the only person who had authority to do so.

A steamship, proceeding in a fog in frequented waters at such speed that she could not stop after seeing a vessel ahead in time to avoid collision, and which also failed to stop on hearing the fog signal of another vessel forward of her beam, as required by article 16, international rules, was held, in the case of *CAMDEN*, 283 *Federal Reporter* 326, in fault for the collision. The fact that the steamer was carrying passengers and it was important to get them into port does not exempt her from the rules for preventing collision in a fog, it was held.

"Towing on hawsers is a legal means of transportation; but it is the duty of commanders of tows to arrange and navigate them, not merely with regard to their own convenience and safety, but with reasonable care and regard for other vessels rightfully on the sea. This is required by international rules, arts. 27 and 29. * * * In view of the great dangers from long tows, this requirement demands * * * that in narrow pas-

sages or congested waters the length of tows be reduced as much as is practically possible."—*CAMDEN*, 283 *Federal Reporter* 326.

A general ship's agent, said the court in the case of *BUCKHANNON*, 283 *Federal Reporter* 352, is presumed to rely upon the credit of the owner, and not upon the credit of the ship. Such an agent is entitled to a lien for advances made of a character to create a maritime lien, where made under a contract clearly stating that the credit of the ship is relied on, and not the credit of the owner.

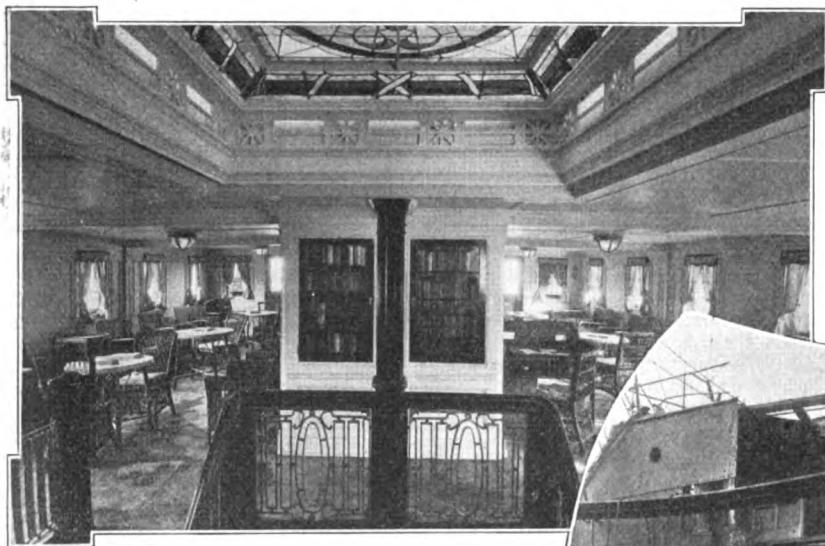
Where seamen, who signed for a voyage, were discharged without their consent or fault, having served only five days in preparing the ship for the contemplated voyage, section 4527 of the United States revised statutes, which entitles seamen, when so discharged "before the commencement of the voyage," to an additional month's wages, applies, though the voyage was abandoned, it was decided in *Brown v. United States*, 283 *Federal Reporter* 425; and a release signed before a shipping commissioner by the discharged seamen on settlement of their wages for the time served, required by section 4552 of the revised statutes, does not operate as a consent to their unlawful discharge.

Where no showing is made of any services rendered to a marshal by the master and crew after he had taken the vessel into custody under a court's order, no recovery for wages subsequent to the attachment should be allowed. A master has no lien for wages.—*IRAGES*, 283 *Federal Reporter* 445.

A vessel under charter to a state, it was decided in the case of *CHARLOTTE*, 285 *Federal Reporter* 84, is not subject to suit for a maritime tort committed during the period of charter use, where the charter makes the state owner *pro hac vice*. A charterer of a vessel, it was said, does not become owner *pro hac vice*, unless the possession and control is surrendered by the owner during the period of use or letting specified in the charter party.

Subsection P, section 30, merchant marine act, gives a lien for supplies furnished a vessel, where they are necessary to the vessel as a vessel, to permit her to make her voyage, such as repairs to her hull, rigging, etc., and supplies for the engine room, if a steamer, and food, etc., for her crew, and does not apply to goods and merchandise for cargo or trading purposes.—*MAJESTIC II*, 285 *Federal Reporter* 91.

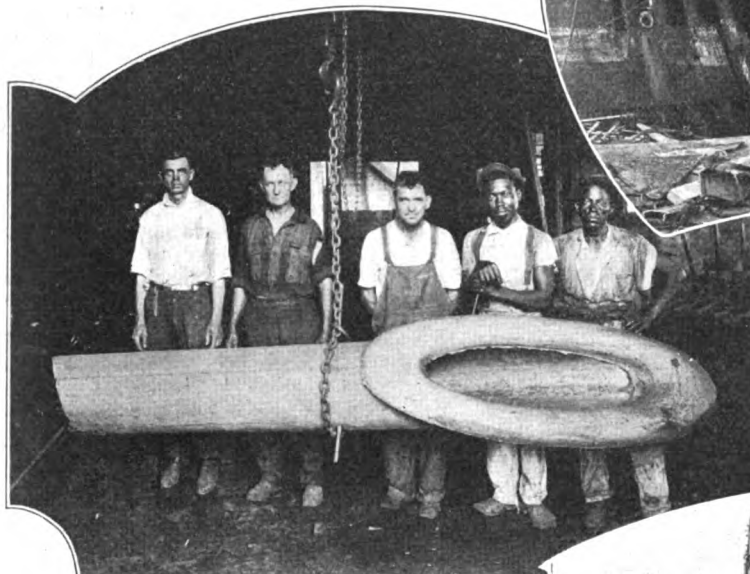
Photographs from Far and Near



Sun room and ladies lounge on Matson liner Matsonia. This fine American liner makes the 2091 mile run from San Francisco to Honolulu, from the Golden Gate to Diamond Head, in 5 days and 22 hours



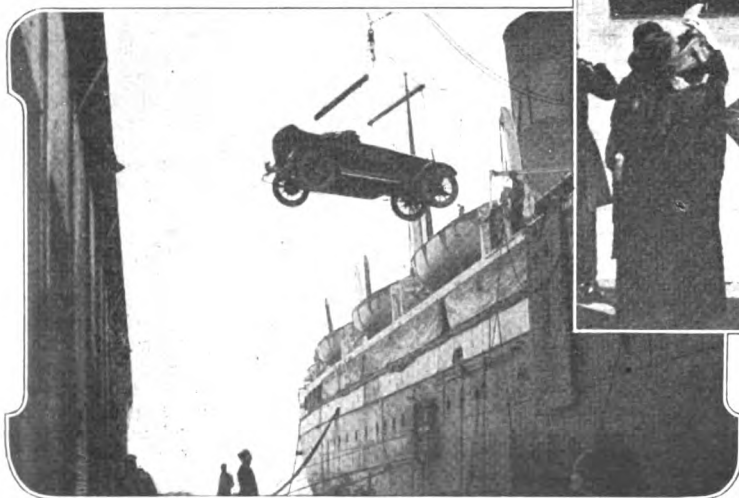
Pensacola gains as port. Views of hawse pipe cast in Bruce Dry Dock Co. foundry and S. S. Springfield in dock for repairs



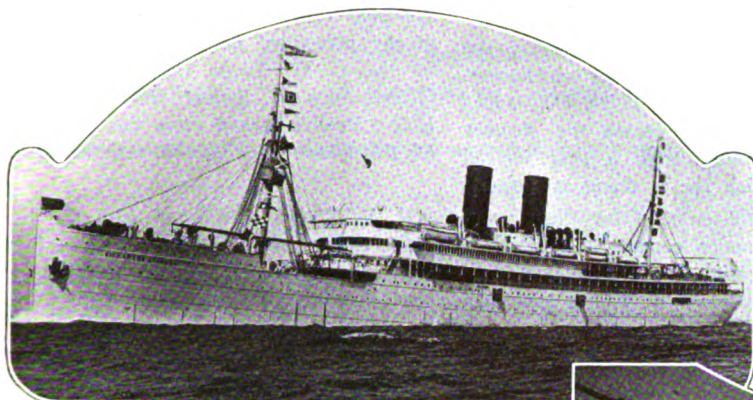
Flagship Maui, of big Matson fleet, which carries 274 cabin passengers



Automobiles are in demand in Hawaii. Small view shows shipment ready for loading at Matson dock, San Francisco. Use of this loading rig (right) permits them to be carried without crating



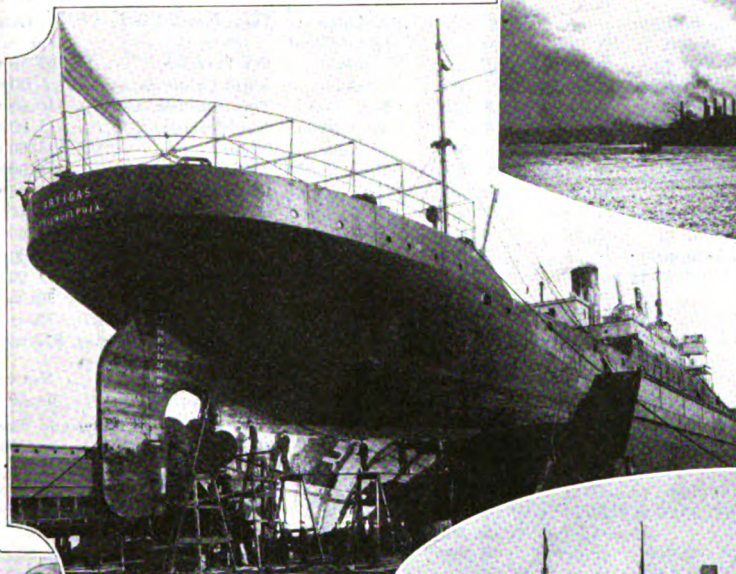
Latest Marine News in Pictures



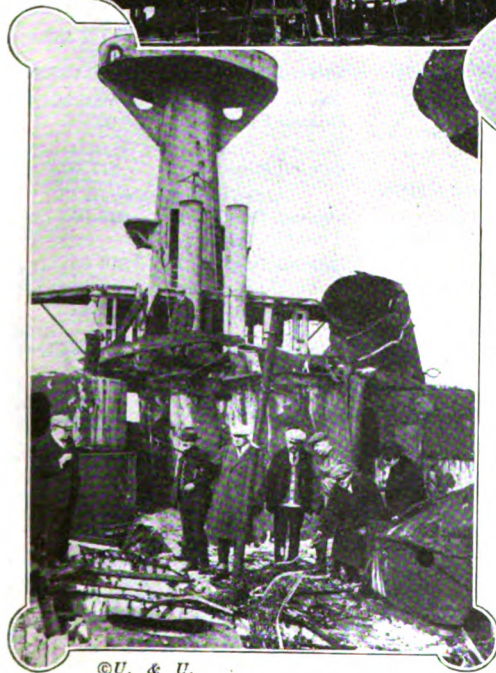
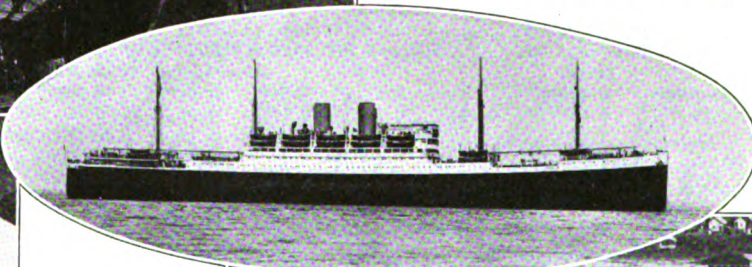
Liner City of Los Angeles is at the shipyard in that city being completely renewed with new turbines, new boilers and new auxiliaries. The work is said to be costing \$1,000,000. When back in the Los Angeles-Honolulu service, her speed will be $16\frac{1}{2}$ knots against $14\frac{1}{2}$ knots previously

New York harbor scene, Queensboro bridge against the winter sky

Docking the S. S. Artigas, a Hog Island built ship, on 8000-ton floating dock of the Atlantic Works, Boston



New Hamburg-American liner Deutschland which will leave Hamburg March 27 on her maiden voyage and New York on April 17. She is of 22,000 gross tons, is over 600 feet long, turbine driven, twin screw oil burner



End of Indiana Fighting Bob Evans flagship at battle of Santiago. Sunk by bombs, she is now being sold for scrap



Airplane view of Bruce repair plant, Pensacola. S. S. Afoundria in drydock, Ogontz and Springfield in slip

©U. & U.

French Company Plans To Build Big Liner

At a special meeting of stockholders of the Compagnie Generale Transatlantique, Paris, a resolution was passed authorizing a loan of 50,000,000 francs (\$2,100,000) to be secured by an issue of bonds, for building a large steamer to be launched in the summer of 1927. Construction of this vessel, which will be intrusted to a French shipyard, will take about three years. The total cost will be more than 100,000,000 francs (from \$4,000,000 to \$5,000,000). The com-

pany possesses only two large steamers at present, the FRANCE and the PARIS. The profitable results obtained with the latter have largely influenced the stockholders in passing the resolution.

Decision was reached to convert the FRANCE from a coal to an oil burner. This will cost about 17,000,000 francs (\$715,000) but will enable the steamer to make 17 round trips a year instead of the 13 which she is doing at present.

A new 20,000-ton ship for the French line is now under construction in England. This vessel, the DE GRASSE, will have only one class of cabins and will

be able to carry 450 passengers, not including emigrants, and 8000 tons of freight.

During 1923, the company's ships ran 2,800,000 miles compared with 3,100,000 in the preceding year. Exports shipped by the C. G. T. in 1923 amounted to 672,000 tons as against 600,000 tons in 1922. Profits earned since the beginning of this year are reported satisfactory.

H. E. RHODA, connected with the Seattle offices of the Luckenbach line, has been promoted to the position of strict freight agent of the company.

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to March 7, 1924, on Future Loadings

NOTE: FREIGHT RATES HAVE HELD STEADY OR ADVANCED.

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo cu. ft. 100 lbs.	Finished steel	REMARKS Freight Offered	From North Pacific Ports to	Lumber Per m. ft.
Liverpool	3a 9d	\$0.50	\$0.25	\$0.22	\$0.40	\$0.75	\$7.00T Good	San Francisco	\$5.50 to 6.00
London	3a 3d	0.50	0.25	0.22	0.40	0.75	7.00T Good	South California	6.00 to 6.50
Christiania	\$0.22	0.45	0.40	0.27	0.42½	0.85	8.00T Very Good	Hawaiian Islands	10.00 to 10.50
Copenhagen	0.22	0.40	0.40	0.26	0.42½	0.85	8.00T Very Good	New Zealand	15.00 to 16.00
Hamburg	0.14	0.35	0.32½	0.25	0.37½	0.75	8.00T Fair	Sydney	14.00 to 16.00
Bremen	0.12	0.35	0.27½	0.21	0.37½	0.75	8.00T Very Good	Melbourne-Adelaide	15.00 to 17.00
Rotterdam	0.16	0.30 to 0.32½	0.25	0.21	0.35	0.70	7.50T Very Good	Oriental Ports	11.00 to 14.50
Antwerp	0.15	0.32½	0.32½	0.22	0.35	0.70	7.00T Good	Oriental Ports (logs)	15.00 to 18.00
Havre	0.14	0.50	0.22½	0.27½	0.40	0.75	8.00T Fair	Peru-Chile	13.00 to 15.00
Bordeaux	0.14	0.50	0.22½	0.27½	0.40	0.75	8.00T Fair	South Africa	19.00 to 20.00
Barcelona	0.20 to 0.25	12.00T	0.40	10.00T	—12.00T—	10.00T	10.00T Fair	Cuba	11.00 to 14.00
Lisbon	0.20	0.65	0.40	7.00T	—20.00T—	7.00T	7.00T Fair	United Kingdom	80s to 90s
Marseilles	0.15	0.55	0.50	5.60T	—20.00T—	5.00T	5.00T Very Slow	United Kingdom (ties)	70s to 80s
Genoa	0.17½	0.50	0.35	0.30	0.40	0.80	6.00T Fair	Baltimore-Boston range	\$14.00 to 15.00
Naples	0.17½	0.50	0.35	0.30	0.40	0.80	6.00T Fair	Baltimore-Boston range (ties)	Not quoted
Constantinople	0.23	15.00T	0.75	0.35	—20.00T—	8.00T	8.00T Quiet	Buenos Aires	14.00
Alexandria	0.25	15.00T	0.75	0.32½	—20.00T—	8.00T	8.00T Not Good	Flour and Wheat	
Algiers	0.20	0.75	0.75	0.30	—20.00T—	7.00T	7.00T Very Slow	Oriental Ports (net ton)	\$ 6.00 to 6.75
Dakar		14.50T		12.00T	—20.00T—	10.00T	10.00T Good	U. K. and Continent (gross ton)	37s 6d to 40s
Capetown	6.00T	10.00T		7.50T	—10.00T—	8.00T	8.00T Fair to Good	Mediterranean	41s 3d to 42s 6d
Buenos Aires		18.00 to 20.00T			18.00 to 20.00T†	7.00 to 7.70T	7.00T Fair	General Merchandise	
Rio de Janeiro		19.00 to 21.00T		7.00 to 7.70T	19.00 to 21.00T†	6.00 to 6.60T†	6.00T Fair	Oriental ports	\$12.00
Pernambuco		22.00T		9.00T	—22.00T—†	8.60T†	8.60T Fair	Steel	
Havana	0.22½ to 0.30*	0.42½*		0.22½*	0.54*	1.08*	0.20* Fair	Oriental Ports	\$6.50T to 8.00T
Vera Cruz	0.25	0.40	0.45	0.25	0.52½	1.05	0.35 Fair	Sulphate of Ammonia	
Valparaiso		1.07		0.70	0.45	0.80	10.00T Fair to Good	Oriental Ports	\$9.00
San Francisco		0.40 to 0.70		0.75 to 1.10		2.50 0.55 to 1.00	Very Good	Cigars	\$12.00
Sydney		18.00T	2.50	18.00T	18.00-24.00T	9.00-12.00T	Very Good	Agricultural Implements	
Calcutta		16.00T	0.60	15.00T	—16.00T—	10.00T	Very Good	Oriental Ports	\$10.00

T—Ton. †Landed. ††Heavy products limited in length. *Extra charge for wharfe.

NOTE: SPECIAL SURCHARGE OF 25% ON ALL FREIGHT TO MEXICO ON ACCOUNT REVOLUTION WILL BE ELIMINATED MARCH 17. RATES GIVEN ARE NEW FLAT RATES

Principal Rates To and From United Kingdom

	s	d		s	d
Grain, River Plate to United Kingdom	27	6	Pig iron, or ferromanganese, United Kingdom to New York or Philadelphia	13	6
Coal, South Wales to Near East	9	9	Iron ore, Bilbao to Middlesbrough	7	6
Coal, United Kingdom to Hamburg	5	1	Iron ore, North Africa to Philadelphia	7	0
Manganese Ore, Poti to Philadelphia	\$3.80				

Bunker Prices

At New York

	Coal alongside per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
Jan. 11, 1923	\$7.90	\$1.50	4.75 cents
April 11	6.75@7.50	1.76½	5.10@5.35c
July 11	5.50@7.00	1.76½	4.40@5.50c
Oct. 11	5.25@6.85	1.51½	4.00@4.50c
Jan. 9, 1924	5.25@6.50	1.41½	4.63@5.42c
Feb. 6	5.25@6.50	1.66½	5.15@5.25c
Mar. 8	5.00@6.50	1.66½	5.15@5.50c

At Philadelphia

	Coal alongside per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
Jan. 9, 1923	\$7.30@8.00	\$1.57½	5.00 cents
April 10	6.00@6.50	1.875	5.10 cents
July 9	5.25@6.25	1.62 @1.73	4.35@4.60c
Oct. 11	5.00@5.50	1.36½@1.51	4.12@4.36c
Jan. 9, 1924	4.90@5.70	1.415	3.86c
Feb. 6	4.65@6.25	1.75	5.41@5.65c
Mar. 7	4.50@5.50	1.955	5.41@5.65c

Other Ports

Boston coal, per ton	\$7.11
Boston, oil, f. a. a., per barrel	\$1.33
Hampton Roads, coal, per ton t.i.b.	4.80@5.30
Cardiff, coal, per ton	22s 6d
London, coal per ton	30s
Antwerp, coal, per ton	27s

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME	DATE	NATURE	PLACE	DAMAGE RESULTING
Anthony Groves, Jr. Arizona	Feb. 5	Aground	Pea Patch Island	Floated	Lady Grey	Feb. 27	Disabled	Quebec River	To rudder post
Atlanta City	Feb. 6	Disabled	Boston	Strbd. prop. damaged	Lindenhall	Feb. 27	Hvy. weather, ice	At sea	To deck, steerer; forepeak leak.
Ansaldo II	Jan. 25	Collision	At sea	Defect. thrust bear.	Mao III	Feb. 10	Fog, stranded	Toddy Rocks	Not stated
Alexandra	Feb. 11	Hvy. weather	At sea	Not stated	Meropi	Feb. 18	Disabled	nr. Cape Town	Mach. dam.
Amelia	Feb. 19	Ashore	nr. Brigantine	Decks dam.;	Montana	Feb. 11	Heavy gale	off New York	To rudder & tiller
Assimina M. Embiricos	Feb. 23	Aground	River Scheldt	steerer	Monterey	Feb. 21	Disabled	nr. Honolulu	Eng. dis.
Anna M. Hudson	Feb. 21	Hvy. weather	At sea	Floated	Marssetta	Feb. 19	Heavy gales	SE Orleans	To sails & windlass
Ambridge	Feb. 25	Disabled	Barbados	Broke in two	Molfetta	Feb. 24	Hvy. weather	Orleans	Sails and windlass lost.
Alden Anderson	Feb. 24	Oil fire	San Pedro	To bows, rudder, stern	Majestic	Feb. 24	Fire	Southampton	Not stated
Agnes D. McGlashen	Feb. 24	Ashore	Oxners Head	Pumps broken	Mikuia	Feb. 27	Disabled	Quebec River	To rudder post
Albert W. Robinson	Feb. 29	Waterlogged	Bet. Bethany & Del. Capes	Damaged	Margaret Thomas	Feb. 29	Aground	Mosquito Inlet, Fla.	Badly dam.
American Trader	Mar. 2	Delayed	At sea	Not leak.	Miskianza	Feb. 22	Disabled	At sea	Turbine trouble
				Abandoned Condenser trouble					
Boston Star	Feb. 6	Fog, collision	Boston	Damaged	Newtowne	Feb. 6	Collision, fog	Boston	Rudder smashed
Balto	Feb. 6	Disabled	At sea	Lost prop.	Northern No. 34	Feb. 5	Ashore	13-foot Knoll	Total loss
Blue Triangle	Feb. 4	Collision	San Pedro	Not stated	Northwestern Miller	Feb. 15	Collision	Panama canal	Unknown
Barge No. 4	Feb. 11	Fire	Brooklyn	Slight	Nora	Feb. 22	Collision	Red Hook	Not stated
Brina P. Pendleton	Feb. 13	Collision	off Charleston	Rig. carried away	North American	Feb. 16	Fire	New York	Considerable dam.
Breaksea Light	Feb. 22	Disabled	New York	Manifold broken	Nansemond	Mar. 1	Ablaze	Baltimore	Heavy
Beatrice	Feb. 8	Sunk	Is. of Bonacco	Not stated					
					Ocean Maid	Feb. 7	Disabled	Lunenburg	Not stated
Columbus	Feb. 3	Hvy. weather	At sea off Barbados	Part deck-load lost	President Legnia	Feb. 6	Fire	Callao	Probably total loss.
Clontarf	Feb. 5	Grounded	Marmora Island	Floated	Pennsylvania	Feb. 4	Hvy. weather	Port Spain	Loss of sails
Colorado	Feb. 11	Disabled	Aden	High pres. turbine broken.	Polarhavet	Jan. 8	Hurricane	At sea	Ex. to deck; steerer dis.
				Damaged	Panuco	Feb. 7	Aground	Old Harbor	Floated; undam.
City of Beaumont	Feb. 13	Collision	off Charleston	Damaged	Paul H. Harwood	Feb. 8	Collision	off Red Hook	Not stated
Cerro Azul	Feb. 6	Touched bottom	off Kills	Damaged	Pacifico	Feb. 9	Wreck	Mouth of Tagus	Total loss
Comeric	Feb. 15	Collision	Panama canal	Unknown	Panuco	Feb. 16	Afoul of chain	No. 1 gas buoy, Pollock's Rip.	Prop. dam.
Capena	Feb. 15	Disabled	St. Michaels	Def. machy.					
City of Corinth	Feb. 19	Fire	New York	No dam.	Poland	Feb. 18	Disabled	Halifax	To eccentric rod & strap
Cadiz	Feb. 26	High weather	At sea	Slight dam.	Pikepool	Feb. 20	Disabled	Halifax	To rudder & decks
Capulin	Feb. 11	Collision	Outside London	Not stated	Peveril	Feb. 12	Ice, dam.	St. Johns	Forepeak filled
					Petrel	Feb. 24	Disabled	At sea	Main steam pipe burst
David C. Ritcey	Feb. 14	Rough sea	At sea	To deckload					
Davisian	Feb. 28	Disabled	At sea	Mach. breakdown	Red Bird	Feb. 5	Disabled	Galveston	Prop. dam.
Dio	Mar. 2	Disabled	At sea	Steerer def.	Rhineland	Feb. 8	Ashore	W. of Chefoo	Letts, cargo
					Republique	Feb. 12	Fire	At sea	Total loss
Edward J. Lawrence	Feb. 7	Disabled	S. of Ambrose	Leak. & rudder dam.	Reuce	Feb. 6	Disabled	Omaesaki	Blown ashore
Edmore	Feb. 8	Ashore	Barrow Island	Water in fore peak	Ruth	Feb. 15	Sunk	East River	Raised
Edward J. Lawrence	Feb. 8	Collision	off Red Hook	Bowsprit broken	River Wye	Feb. 17	Not stated	Pt. Mouton Is.	Wrecked
Ericson	Feb. 15	Disabled	Ches. & Del. canal	Lost prop.	Ruby and Dorothy	Feb. 20	Stranded	Maceio	Leaking
Edna	Feb. 7	Aground	Columbia river	Floated, undam.	Robert P. Murphy	Feb. 21	Fire	Puerto Plate	Total loss
Edward J. Lawrence	Feb. 22	Collision	Red Hook	Damaged	Rebecca C. Scott	Feb. 27	Dismasted	off Mobile Bar	Towed
Emilie Maersk	Feb. 19	Aground	Santa Maria	No damage	Richard B. Silber	Feb. 24	Hvy. weather	At sea	Sails lost
Evelyn	Feb. 21	Not stated	Orient Point	Full of water	Roy Bruce	Feb. 25	Collision	At sea	Cut in two
Eather Elene	Feb. 20	Disabled	Mobile	Eng. trouble	Reginald R. Moulton	Feb. 29	Disabled	At sea	Leak. badly
F. B. Squire	Feb. 14	Grounded	Depot Harbor	Not stated	Sea Prince	Feb. 24	Oil fire	San Pedro	Destroyed
Fuji Maru	Feb. 4	Disabled	At sea	Mach. defect.	Sylva Narrow	Feb. 28	Disabled	Key West	Lost blades on prop.
Falmouth	Feb. 20	Submerged	Boston	Raised	Sama	Mar. 3	Fire	New York	Dam. slight
Fort Hamilton	Feb. 28	Fire	New York	To smoke room					
					Truro	Feb. 8	Disabled	Norfolk	Leaking
Gulfking	Feb. 6	Aground	nr. Pt. Arthur	Floated	The Lambs	Feb. 16	Disabled	Marseilles	Boilers, etc.
Grace Hilda	Feb. 14	Collision	Lunenburg	Not stated	Trident	Feb. 12	Aground	Ship Is. Bar	Not stated
					Taiyo Maru	Feb. 16	Parted moor.;	Yokohama	Floated; undam.
Hickman	Feb. 22	Disabled	Ponta Delgada	Boilers	Trelyon	Feb. 27	Main valve burst	Boston	Not stated
Haleakala	Feb. 22	Disabled	nr. Honolulu	Prop. lost	Tatjana	Feb. 27	Ashore	Carmanah Pt.	Total loss
Herman Lee	Mar. 1	Fire	New York	Dam. slight	Thomas	Mar. 2	Disabled	off Florida Coast	Abandoned
					Tamarac	Feb. 25	Collision	Sabine	Consid. dam.
Isabella	Feb. 6	Fire	Brooklyn	Not stated					
James C. Hamlen	Feb. 13	Disabled	Sea Girt	Rudderdam	Ubbergen	Feb. 17	Collision	Yonkers	Slight dam.
John Bracewell	Feb. 29	Ashore	off Rockport	Leak. & rudder dam.					
					Virginia Dollar	Feb. 7	Disabled	off Honolulu	Unknown
Knud	Feb. 5	Aground	Sewaren	Floated	Vardulia	Feb. 17	Hvy. weather	At sea	Sundry losses
Kiso Maru	Feb. 5	Disabled	At sea	Tail shaft broken	Vimy	Feb. 14	Wreck	At sea	Mostly sub.
					Vera Himmelman	Feb. 14	Collision	Lunenburg	Mainboom broken
Lubrico	Feb. 4	Collision	San Pedro	Not stated					
Loosa	Feb. 11	Disabled	Del. Breakwater	Not stated					
Lighter No. 12	Feb. 25	Ice, sunk	Malden River	Not stated					

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME	DATE	NATURE	PLACE	DAMAGE RESULTING
Vincent A. White	Feb. 29	Hvy. weather	At sea	Lost anchor, chain and sails	West Nomentum	Feb. 21	Fire	Portland	Bilges dam.
Virginia	Mar. 3	Struck sub. object	At sea	Leaking	War Pathan	Feb. 25	Collision	Sabine	Consid. dam.
Warons	Feb. 3	Hvy. weather	At sea off Barbados	Leak. badly	Yuma	Feb. 9	Aground	Maudingo Bay	Not seriously dam.
					Zovetto	Feb. 12	Ashore	St. Davids Lthse.	Water in holds

Deliver First Atlantic Electric Oil Barge

The J. H. SENIOR, first diesel-electric barge on the Atlantic coast, is the first of her kind owned by the Standard Oil Co. of New Jersey. She was launched Jan. 5 by the Newport News Shipbuilding & Drydock Co. Sea trials were held Feb. 22.

Two McIntosh & Seymour diesel engines drive two Westinghouse 185-kilowatt main generators and 35-kilowatt auxiliary generators and exciter units, and also the 445 horsepower Westinghouse propelling motor. All of the electrical driven auxiliaries including cargo oil, sanitary, bilge, fuel oil transfer, circulating water, fire and bilge and general service pumps, stood satisfactory tests.

The pilot house control was used for docking and Captain Sacks tied up to the dock and stopped with machinery without signaling the engine room crew. The J. H. SENIOR is 210 feet long, 38 feet wide and has a capacity of 11,000 barrels of oil at a 13-foot draft. She will operate in Chesapeake bay service.

Five crossings of the Hudson river, each with four lines of traffic, will be needed at New York by 1924, if the ferries are to be abandoned by that time. The port authorities have prepared a special report to the governor approving this prediction, opposing a bridge at Fifty-seventh street and approving one north of 125th street.

The Alaska Steamship Co. has purchased the 374-foot passenger liner COLON with accommodations for 427 passengers for service between Seattle and south-western Alaska in company with the steamships ALASKA and NORTHWESTERN. The company now has five passenger steamers.

The Dollar line will continue its round-the-world freight service with the four steamers ROBERT DOLLAR, ESTHER

DOLLAR, M. S. DOLLAR and VIRGINIA DOLLAR. The company is putting into this east-to-west world service the seven passenger liners bought from the ship-ping board. The freighters will follow the same route as the liners, dropping Mediterranean ports of call and calling at Boston, New York, Baltimore and Norfolk, Va.

When the Merchants & Miners Transportation Co. reopens its passenger service between Boston and Philadelphia, a semiweekly instead of a weekly service will be maintained.

Late Marine Patents

Copies of any one of these patents can be obtained by forwarding 25 cents in stamps to Siggers & Siggers, patent attorneys, National Union building, Wash- ington, and mentioning MARINE REVIEW.

1481829—Power apparatus for use on vessels, Alan E. L. Chorlton, Westminster, London,



W. J. LOVE

Who Has Just Resigned as Vice President of the Emergency Fleet Corporation and Man-aging Director of the United States Lines

and John S. Doig, Grimsby, England, as-signors of one-third to Sir William Beardmore, Westminster, London, England.

1481853—Electric ship propulsion, E. F. W. Alexanderson, Schenectady, N. Y., assignor to General Electric Co.

1481859—Ordnance sighting apparatus, Arthur T. Dawson and George T. Buckham, West-minster, London, England.

1481880—Electric ship propulsion, David C. Prince, Schenectady, N. Y., assignor to Gen-eral Electric Co.

1481882—Electric ship propulsion, David C. Prince, Schenectady, N. Y., assignor to Gen-eral Electric Co.

1481883—Electric ship propulsion, E. F. W. Alexanderson, Schenectady, N. Y., assignor to General Electric Co.

1483011—Hatch covering for navigable ves-sels, applicable to other similar purposes. William G. Read, Prescott, England.

1482033—Swimming device, Joseph Pukel, New York.

1482696—Compensator for submarines, Joseph E. Swendeman, Philadelphia.

1482762—Propeller for boats, Joseph Alcorn, Coatesville, Ind.

1484075—Boat, John J. Otto, Chicago.

1478525—Swimming buoy, Henry Mac-Kenzie, Stanmore, Alta., Can.

1478546—Lowering and raising apparatus for ships' boats. Harry W. Broady, Bayside, N. Y., assignor to America Balsa Co., Inc.

1478928—Rudder, John J. Toner, New York.

1478994—Mechanism for turning ships davits. Axel Welin, London, England, assignor to American Balsa Co., Inc.

1479025—Marine Motor. Arthur J. Caille and Theodore L. Smith, Detroit.

1480218—Submarine signaling. Charles R. Moore, Wyoming, N. J., assignor to Western Electric Co., New York.

1480417—Life preserver. Thomas Irving Pot-ter, East Orange, N. J., assignor to Feder-ated Engineers Development Corp., Jersey City, N. J.

1480934—Marine vessel. Herman Gustav Carl Frahm, Hamburg, Germany.

1481112—Cooling device for marine engines Rudolph Toennes, Boonville, Mo.

1481144—Life saving belt or preserver. Al-bert Pastor, Alpha, N. J.

1481154—Means for launching lifeboats. Anc P. Schat, The Hague, Netherlands.

1481230—Submarine. Francesco Rovetto, Spezia, Italy.

1481512—Boat propeller. George C. Kelly, Kalamazoo, Mich.

1481707—Hull, or body construction of ships, aircraft, and motor road vehicles. Gus-tavus Green, Twickenham Green, England.

1481712—Ship unloading apparatus. Frank P. Huckins. Newton, Mass.

Business News for the Marine Trade

The Steamship Fuel Corp., 33 Rector street, New York, has opened a sales office at 872 Ellicott square, Buffalo, in charge of J. Fred Morlock.

Paul J. Bertelsen, Newton, Mass., has been appointed as receiver of the Crowell & Thurlow Steamship Co., Boston. The Atlantic Works, Boston, petitioned for the receivership, alleging that it was owed \$19,935.08 by the defendant and other debts were more than \$500,000.

Fire Equipment & Marine Supply Co., Cleveland, has increased its capital stock from \$15,000 to \$25,000.

Forest City Steamship Co., Cleveland, has increased its capital stock from \$275,000 to \$500,000.

Coastal Steamship Corp., New York, has increased its capital stock from \$150,000 to \$450,000.

All-America Steamship Line, New York, has been incorporated for \$5000 by A. H. Dubud, E. Bonilla and Y. Maxudiam, with P. Scandella Jr., 60 Wall street, as attorney.

Argonaut Steamship Co., New York, has increased its capital stock from \$250,000 to \$450,000.

City Naval Equipment Co., Brooklyn, N. Y., has been incorporated for \$10,000 to manufacture and deal in marine equipment, by M. and C. Kassler and L. Turbowitz, with J. Goldstein, 32 Court street, Brooklyn, as attorney.

Sonom Steam Turbine Corp., Wilmington, Del., has been incorporated for \$2,000,000 to manufacture steam turbines for various uses.

Nicholson Universal Steamship Co. has been incorporated for \$100,000 at Wilmington, Del.

Delaware Breakwater Terminal Corp. has been incorporated for \$15,000,000 to provide port and terminal facilities in maritime work, by Hiram R. Burton, Frank S. Carter and William F. Townsend, Lewes, Del. William H. Fox, Lewes, Del., is attorney.

The Racine Mfg. Co., Racine, Wis., manufacturer of automobile bodies, etc., plans new department to build steel-hulled power boats. Charles F. Barndt is vice president and general manager.

The National Machine & Iron Works, Inc., 522-8 Conti street, New Orleans, has leased equipment and will start operating a foundry making brass goods, with particular attention to marine repair work.

Port of Portland, Oreg., has called for bids for constructing 30-inch diesel electric dredge. Hull is to be 236 feet with 50-foot beam and 12-foot 9-inch depth.

The Thunder Bay Pulp & Paper Co., Port Arthur, Ont., has let contracts for constructing dock of 252-foot frontage with 500 feet of trestle work, to Thunder Bay Harbor Improvement Co.

Drekolias Avythsthos Shipbuilding Co., Chicago, has changed its capital stock and amended its rights and preferences.

The Saginaw Bay City Steamship Co. has been incorporated with \$300,000 capital stock to operate a packet steamer between Saginaw, Bay City, Port Huron and Detroit, Mich., and Cleveland. Charles W. Stiver is president and general manager; John L. Jackson, vice president, and Walter C. Hill, secretary and treasurer.

Hannah Bros., San Francisco, has taken a contract from Richmond-San Rafael Ferry

Co. for three new slips at its Castro Point ferry landing. Old slips will be torn out.

Negotiations are under way to form a shipping company to handle a large fleet of vessels under charter between San Francisco and Oriental ports, according to P. C. Denroce, president of S. L. Jones & Co., San Francisco. Proposed company will bear the name of Oriental-Pacific Navigation Co.

One of the largest transactions in shipping at Seattle has just been closed by Thomas Crowley in the purchase of the stock of

East, recently was awarded the contracts by Dollar Steamship Line for work on its seven around-the-world liners.

Schnitzer & Wolfe Machinery Co., Portland, Oreg., has begun work of wrecking Skinner & Eddy shipyard No. 2. The purchase by the Schnitzer company for \$256,255 included tools, machinery and other equipment which is to be removed from the yard within six months from date of sale.

The Southern Pacific Co. plans constructing two additional freighters for coastwise

Ship Repair Contracts Let

Bethlehem Shipbuilding Corp., San Francisco, secured contracts for reconditioning the Nelson Steamship Co. freighter CADARETTA at \$15,998; for annual inspection and repairs to the Associated Oil Co.'s tanker ALDEN ANDERSON at \$3480 and for voyage repairs on the Pacific Mail liner PRESIDENT LINCOLN at \$1695.

Hanlon Drydock & Shipbuilding Co., Oakland, Cal., secured contract for installing a new rudder post on the lumber steamer JOHN C. KIRKPATRICK at \$1000.

General Engineering Co., San Francisco, secured contract for repairs and renewals on the shipping board steamer WEST HARTS at \$16,809; for general repairs on the steamer SALINA at \$4133; for repairs and renewals on the WEST

ELCAJON at \$23,760; for general repairs on the WEST ISLIP at \$1856; for miscellaneous repairs on the following ships: KIRKPATRICK, ROBERT JOHNSTON, THREE SISTERS, JOHN C. STETSON, CHEHALIS, WEST IVAN; for repairs, docking and painting on the following ships: HELENE, STAR OF SCOTLAND, SISKIYOU, FORT BRAGO, GLYMONT, Lighthouse ship No. 70, ferry steamer TAMALPAIS, schooner OLYMPIC and SAN JUAN.

United Engineering Co., San Francisco, secured contract for general repairs on the transport SOMME at \$2272.

Crowley Marine Railways, San Francisco, secured contract for voyage repairs on the shipping board steamer WEST CHOPAKA at \$1153.

J. B. C. Lockwood in the Drummond Lighterage Co., that city. Mr. Crowley has been named to succeed Mr. Lockwood as president of the company.

Specifications for reconditioning of the GDANSK have been put out by the Oceanic Steamship Co., San Francisco. The GDANSK, formerly the SIERRA, is to be put into condition to re-enter the San Francisco-Australian passenger service.

General Engineering Co., San Francisco, obtained the contract for repairs and renewals to the freighter WEST FARALON.

Construction has been started for a power plant and shipping pier for the Igonish Gypsum Co., Igonish, N. S. Machinery, including oil engines, generators, motors, conveyors, etc., will be purchased. S. A. Stephens, Canada Cement building, Montreal, Que., is manager.

Great Lakes Steamship Co. has been incorporated for \$2000 with a Delaware charter to engage in shipping.

The Great Lakes Corp. has been incorporated for \$1000 to manufacture and deal in yachts, boats, ships, marine engines and equipment, by John A. Barnes, Ernest Schein, Lucille Destaubin, with offices at 1004 Con-way building, Chicago.

The Todd Shipbuilding Corp. has the contract for repairing the British steamship COROSADO.

New York Shipbuilding Corp. has taken orders for seven car floats for New York harbor work.

Libby, McNeil & Libby Co. has purchased the Orsgeo, 2595 tons, from the United States shipping board.

Coos Bay Lumber Co., Coos Bay, Oreg., has purchased the VULCAN, 11,250 tons, from the United States navy.

W. & A. Fletcher Co., Hoboken, N. J., one of the largest ship repair plants in the

service, each to be about 8000 tons dead-weight.

The General Engineering & Drydock Co. has been awarded contracts for repairing and overhauling the SALINA, shipping board freighter.

Flynn Salvage Co., Santa Monica, Cal., has purchased for a total of \$1650 seven government destroyers wrecked at La Honda, Cal. Ships cost the United States \$7,000,000. Work of salvaging the destroyers will be commenced immediately according to orders of the navy department directed to the twelfth naval district.

Late Marine Patents

Copies of any one of these patents can be obtained by forwarding 25 cents in stamps to Siggers & Siggers, patent attorneys, National Union building, Washington, and mentioning MARINE REVIEW.

1472084—Level wind reel, William Schmid, Coldwater, Mich.

1472558—Directional receiving of submarine signals, Reginald A. Fessenden, Brookline, Robert I. Williams, Newton, and Edward C. Wood, Somerville, Mass., assignors to Submarine Signal Co., Portland.

1473049—Foot propeller device for boats, Luther B. Roberts, Sweetwater, Tex.

1473274—Device for securing and releasing lifeboats, Harry W. Broady, Bayside, N. Y., assignor to American Balsa Co., Inc., New York.

1473337—Atmospheric compound for divers' use, Charles John Cooke, Washington.

1473484—Steering arrangement for motor driven boats, Karl Lenck, Berlin, Germany.

1473832—Boat propeller, John D. Park Jr., Cincinnati, O.

1473557—Bow facing oar, John L. Ingersoll, Evert, Mich.

1474725—Boat, John McLeod, Downing, Wis.

New Business Plans Announced by Marine Companies

SPERRY GYROSCOPE CO., Brooklyn, N. Y., has moved its San Francisco branch office to the new Matson building. J. F. McConkey formerly located at the Sperry office at Seattle will have charge of the San Francisco office. O. A. Frischmuth, previously with the Hunt Mirk Co. will act as assistant to Mr. McConkey. In view of the increasing amount of business on the Pacific coast, a school will be opened up in San Francisco and will be available to all officers of the merchant marine who desire to become acquainted with the gyro-compass, gyro-pilot and other Sperry apparatus. There will be no charge for instructions at the Sperry school. H. S. Burtis of the New York service department will relieve Mr. McConkey in Seattle. W. I. Selover of the Los Angeles office has moved from Pier A, Slip 2, Wilmington to 407 Canal avenue, Wilmington, Los Angeles. T. A. Morgan, vice president in charge of sales has just returned from San Francisco and

while there, the foregoing plans were made. * * *

The Alberger Pump & Condenser Co., New York, has been purchased by the Wheeler Condenser & Engineering Co., Carteret, N. J. * * *

Osborn & Co., marine insurance, 175 West Jackson boulevard, Chicago, is now organized as Osborn & Lange, Inc. * * *

Milwaukee offices of John Prindiville & Sons, marine insurance and vessel brokers, which have been at 302 Mitchell building, now are located at 411 Chamber of Commerce. * * *

Edward P. Farley, former chairman of the United States shipping board, has established a New York office at 11 Broadway. * * *

The Garland Line, San Francisco, opened its own offices at 244 California street, March 1. The following officers of the company will be transferred from New York: W.

M. Campion, vice president; E. S. Sommers, freight claim agent; S. A. Moss, auditor; Alexander Hynd, port engineer, and Capt. D. O. Campbell, marine superintendent. * * *

The Boston Ship Brokerage Co., of which Capt. O. A. Gilbert is principal, has moved from 75 State street, to 99 State street, Boston. * * *

T. A. Lee, Pacific coast manager for the Furness Line, announces that the company will open its own offices in Seattle, Portland, Oreg., and Vancouver, B. C., on April 1. * * *

George M. Marr, district manager for the past four years at Philadelphia for Chas. Cory & Son Inc., New York, has been transferred to the sales department at the main offices in New York. Robert L. Reaves, formerly electrical engineer at Hog Island and more recently connected with the naval air station at Lakehurst, N. J., succeeds Mr. Marr.

New Trade Publications

CRANES—The multiplicity of applications for locomotive cranes are described and illustrated in a booklet which has been issued by the Brown Hoisting Machinery Co., Cleveland. The applications described include coal yards, docks, foundries, general contractors, industrial plants, lumber mills and yards, material dealers, railroads, road construction, scrap yards, traction lines, etc. Clearance diagrams of various types of cranes also are included.

DIESEL ENGINES—An illustrated bulletin published by the Union Gas & Engine Co., Oakland, Cal., contains descriptions of 3, 4 and 6-cylinder diesel engines developing 150 to 300 horsepower. The parts and accessories are discussed and the general dimensions are given with the aid of a diagram.

FLEXIBLE COUPLINGS—A new design of flexible coupling is described in an eight-page pamphlet recently issued by the Falk Corp., Milwaukee. This coupling consists of two flanged steel disks forming a cylindrical grid, on the outside of which are pitched cross grooves in which a spring is inserted. The spring is the flexible member of the coupling and its shape and that of the grooves forms the characteristic feature of the coupling. The various parts of the coupling are illustrated and a table for determining the size of coupling to be used is presented.

CAR DUMPERS—An eight-page pamphlet recently has been published by the Wellman-Seaver-Morgan Co., Cleveland, in which a new revolving car dumper is described. This machine consists of a carriage cradle which is supported at either end by equalized rollers on which it revolves. These rollers are carried on structural steel bases which are securely bolted to the foundation. The end frames of the cradle are in the form of circular girders which are partially surrounded by gear segments. Rotating is accomplished by two pinions meshing with the gear segments and driven by a single motor supported on the foundation at the rear of the cradle. The cradle end frames are connected by plate girder construction forming a

box which is open at the top, and in which the car is held while dumping. The tracks passing through the cradle are carried on a platen which is capable of lateral movement. When the cradle with the loaded car starts to revolve, the platen moves laterally toward the dumping side until the side of the car engages blocking provided for the purpose, and then clamps descend until they rest on the top of the car. Continued motion of the cradle automatically engage the clamp counterweights which hold the car securely in place and which release automatically when the cradle returns to the original position. Views of various parts of the machine together with a sectional diagram of the installation are shown in the pamphlet.

LOCOMOTIVE CRANES—In its bulletin No. 59, the McMyler-Interstate Co., Cleveland, refers to its 40 years of building cranes, from whirlies to its present types. The bulletin also describes and illustrates the company's convertible type of crane which may be operated by steam, electricity or gasoline and be mounted on crawlers, tractor wheels or railroad rails and used with dragline bucket, shovel or magnet. Construction and parts are illustrated by half-tones and actual operation scenes are shown. Tabulations of various figures of value in relation to the cranes are presented.

ELECTRIC WIRING DEVICES—The Crouse-Hinds Co., Syracuse, N. Y., has issued a folder describing some of the electrical wiring devices manufactured by this company. The folder is illustrated with views of the various products and also of some of the installations.

BOILER SETTING COATING—The Paul B. Huyette Co., Philadelphia, has issued a number of pamphlets describing a coating for boiler settings, gage glass protector, stoking tools, adjustable sprocket rim with chain guide, special gage glass and oil filter.

WOODWORKING MACHINERY—An exceptionally complete catalog, bound in cloth and containing 320 pages, recently has been distributed by the Oliver Machinery Co., Grand Rapids, Mich. All of the products of the company are well illustrated and described at

length. In addition, exterior and interior views of the plants of the company are shown together with photographs showing a number of installations of machinery made by this firm. Methods now in use for packing and crating machinery for shipment also are shown.

TURBINE BLOWERS—An interesting booklet on hand and stoker fired turbine blowers has been prepared by the L. J. Wing Mfg. Co., 358 West Thirteenth street, New York. This is a publication of 24 pages and contains considerable engineering data not only on the application of these blowers to hand fired boilers, but also goes into detail in discussing the application of blowers to underfeed and chain grate stokers. The book is well illustrated throughout.

RIVETS—Cobb & Drew, Inc., Plymouth, Mass., recently have issued a catalog describing the various products of the company, which include rivets, burrs, staples, tacks and cotters. The various types of heads, both standard and special, are described, and a table of decimal equivalents is included.

OIL BURNERS—The Combustion Engineering Corp., Broad street, New York, recently issued a pamphlet on a new type of oil burner. The burner, which is applicable to stationary boilers or to the burning of oil for any purpose, is especially designed for refining work. The pamphlet contains a general description of the burner together with other valuable information on the performance and application of the device. A sectional diagram of the burner also is included.

WIRE ROPE—Answers to many questions pertaining to wire rope may be found in an 80-page catalog recently issued by the Macwhyte Co., Kenosha, Wis. The construction of various kinds of rope is shown and the purpose to which these types may be put also is indicated. Included in the wire shown is that used for haulage, hoisting, tiller, towing, hawsers and mooring lines, guys, logging, etc. Information also is included on hoist hooks, rope sockets, clips, turnbuckles, special fittings, as well as directions for splicing.